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SOME OBSERVATIONS ON THE DIAGNOSIS AND TREATMENT OF SUBACUTE AND CHRONIC PANCREATITIS

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PANCREATITIS in the acute form is fairly well known nowadays to the general practitioner. It is so dramatic and so sudden, that every body has read about it and is on the lookout for it. We have the impression that the same cannot be said of the milder forms of the disease. We believe it is not yet widely known that many of the attacks of acute pain in the upper abdomen, which pass off in a few hours or a few days, are due to a subacute swelling of the pancreas. These cases are too often set down vaguely as acute gastritis, or gastric fever, or gastric ulcer, or are allowed to go without diagnosis.

It is this type to which we would like to draw attention in this paper. The material upon which it is based comprises the records of thirty-two cases of pancreatitis, acute and chronic, all of which were proved by operation or by autopsy. These have occurred in the services of the late Dr. James Bell, Dr. A. E. Garrow, and Dr. Archibald, in the Royal Victoria Hospital. A considerable number, perhaps a score, in which pancreatitis was diagnosed clinically, but which lack operative or autopsy confirmation, are not included. Of the thirty-two cases eleven were observed in the service of one of us (E. A.).

It is a matter of common belief that gall-stones are almost always present in cases of pancreatitis, and indeed that they are

the chief factor in causation. It is, therefore, the more interesting to find that of the thirty-two cases there were only thirteen in which gall-stones were present; and in only four of these thirteen was the stone in the common duct. This is an experience which runs counter to the figures given in larger statistics in which this point is specifically mentioned.

For the purposes of a clinical description of chronic pancreatitis, or, better called, the relapsing or recurrent type, we have taken, first of all, fifteen out of the nineteen cases in which no gall-stones were found. This with the idea that, being able to exclude the possible influence of stones in the causation of symptoms, there would result a clearer picture, one, that is, more certainly the result of the pancreatic swelling. To this we have added six of the list in which gall-stones were coincidently found, but in which one could feel reasonably certain, for one reason or another, that the recurrent attacks were due to the pancreatic lesion and not to the stones. This makes a total of twenty-one cases, of which ten have come under the personal observation of one of us (E. A.).

In a preliminary way it may be said that the analysis of the symptoms justifies our concluding that the diagnosis is frequently not especially difficult, not nearly so difficult, for instance, as in the very acute cases with hæmorrhage and necrosis. Indeed, of the eleven cases in Dr. Archibald's service it was possible in seven to establish a reasonably sure diagnosis before operation.

If one now takes up the symptoms in order, one naturally begins with that of pain. To put it briefly, the feature of outstanding importance is usually pain in the upper abdomen, recurring at irregular intervals. The *situation* of the pain is nearly always in the mid-epigastrium. It was so in eighteen of the twenty-one cases, while in three it is set down as being in the right upper quadrant. The sufferer from a gall-stone attack, upon the request to place his hand over the site of pain, usually indicates the region of the upper right rectus or further outwards; while the victim of pancreatic swelling will almost invariably put his hand directly in the mid-line, or sometimes a little to the left. This is true except during the extremely acute phase of hepatic colic, when the pain is so severe that it frequently occupies indiscriminately the whole upper abdomen and cannot be referred to any one area in particular. But when the initial pain has somewhat subsided, the value of the localization indicated is considerable. Certain exceptions must be noted. Thus, we have been led into the error (chiefly by this sign) of diagnosing pancreatitis when the real lesion proved to be an acute

interstitial cholecystitis, the gall-bladder occupying an unusual position close in towards the median line. Even in this case one might have been saved the mistake, had one paid due attention to the localization of the pain towards the end of the attack, just before it subsided entirely; for it was then found to be situated a little to the right, and to have disappeared in the mid-line.

Various anatomical points or landmarks have been given as being particularly indicative of pancreatic swelling. Thus, Mayo Robson's point is situated an inch to the right of and an inch above the umbilicus. Desjardin's "point pancréatique" supposed to correspond to the exit of the duct of Wirsung, lies five to seven c.m. from the umbilicus on an oblique line drawn from the umbilicus to the apex of the right axilla. The experience derived from the cases upon which this report is based does not agree with that of the authors just mentioned. There is no fixed point. In practically all cases the area of tenderness has been mapped out with great care by finger pressure. We think it important that this method of palpation should be employed; for if one uses merely the palm of the hand here and there in the epigastric region, one gets no more than the evidence of ill-defined tenderness somewhere in the epigastrium. Such a method will do little to distinguish such differing lesions as cholecystitis, gastric or duodenal ulcer, gastritis, high intestinal obstruction, and pancreatitis. On the other hand, by the method of finger point pressure, advancing gradually from all sides towards the epigastrium as a centre, one is easily able to demonstrate, in cases of pancreatitis, a more or less well defined area of tenderness in which there will be one or two points of maximum tenderness, an area which corresponds accurately enough with the anatomical position of the pancreas. As a natural result, it will be found that the tenderness can frequently be elicited on the left side, as well as in the middle and a little to the right. It rarely extends more than one inch to the right, whereas in some cases, when the swelling affects the whole gland, the tenderness may be followed out nearly to the tail of the pancreas. The point of maximum tenderness is usually found to be exactly in the mid-line, from one to two inches above the umbilicus. Sometimes this maximum tenderness extends half an inch or an inch to the right, or an equal distance to the left. In our opinion this is merely the result of the fact that the acute swelling of the pancreas occupies usually the head and isthmus of the gland, less often the tail, and also that in the mid-line the pancreas is nearest to the surface, and lies upon the prominent bony bed of the vertebral bodies.

The depth at which the pancreas lies would seem also to be responsible for two other particularities in the matter of tenderness. The first is that there is rarely any superficial tenderness except in the severity of the onset, during which period one will occasionally find a Head zone of skin hyperæsthesia. During the subsiding stage one will frequently have to go moderately deep with the finger before exciting tenderness. The other is the presence of tenderness in the left costo-iliac space behind, in which situation one comes more or less directly upon the left half of the gland. If this portion happens to be swollen, tenderness in this area is a marked symptom. I have never found tenderness in the corresponding region on the right side.

While spontaneous pain referred to the epigastrium, being as it is of a subjective character, is notoriously of uncertain value in diagnosis, this sign of tenderness to pressure, upon which we have insisted at some length, is of very much greater value, inasmuch as it is objective. While the complaint of epigastric pain may represent almost any interference with the sympathetic nerve supply of the whole abdominal cavity, localized epigastric tenderness must, as a rule, indicate a localized epigastric lesion. In general terms it may be affirmed that localized tenderness in the abdomen represents very accurately the site of inflammatory processes. It is for this reason that slight differences in the situation of tenderness possess so great a value in distinguishing between lesions of the various organs which are assembled so closely together in the epigastrium. Before concluding these remarks upon the situation of the pain, we would like to express the conviction that if tenderness is definite to the left of the mid-line, and if one can exclude a cardially placed gastric ulcer, one has in that fact rather strong evidence for the existence of a subacute pancreatic swelling.

The radiation of pain has no regularity. Frequently it goes directly through into the back, without reference to one or the other side particularly. Frequently it extends into the right or left hypochondrium, or both; frequently into the right and left iliac regions; not often to the shoulders. Quite often the patient affirms that it has not radiated anywhere, but is fixed in the epigastrium. The variations, we think, correspond in some degree with the severity of the pain.

The *degree* of pain is frequently characterized by its extraordinary severity. We are under the impression that the pain is more agonizing than that of any other acute lesion of the upper abdomen, including perforated gastric ulcer. Large and repeated doses of morphia frequently fail of their effect.

Its *duration* is very variable, being according to the severity of the attack. The pain may last, so far as one can judge from the histories, as short a time as a half hour or even less; or it may persist for a week or more.

As to the recurrence of the attacks, this also varies widely. One patient had slight attacks of pain nearly every day for seven months, and then developed an acute attack ending in total necrosis of the pancreas and death in a few weeks. Another had mild attacks about once a month for ten years. Two patients, girls of twenty-one and twenty-two years of age, respectively, had had frequent attacks every year since the age of fourteen. Another had apparently had frequent attacks for twenty-five years. In all these one could exclude the possibility of gall-stones, which were not present at operation. But in some the presence of adhesions around the pylorus, duodenum, or gall-bladder, even in the absence of gall-stones, or of the evidence of ulcer, left the diagnosis of the cause of these frequent attacks a little unclear. Nevertheless, in some of these, even adhesions were absent, and one is obliged to assume that a short attack of epigastric pain, lasting half an hour or less, may in all probability be set down to transient swellings of the pancreas, the cause of which remains obscure. Very possibly a passing obstruction to the discharge of pancreatic juice, or a spasm of the papillary sphincter may lie at the root of it.

In three cases the pain amounted only to chronic epigastric distress, with occasional sharper, although still mild, attacks of pain. In all these the pancreas was found enlarged and harder than normal, either in the head or throughout the organ.

The incidence of pain in regard to the taking of food seems to be most uncertain. It would seem clear that in some cases at least, the taking of any food was liable to provoke an attack, so that some of the patients volunteered the information that they had limited their diet for long periods of time to little more than fluids. So far as one can tell, the carbohydrates are more apt to cause, or to aggravate, the pain, than the other kinds of food; and this is more or less in accord with physiological findings which go to show that the carbohydrates provoke a large flow of pancreatic juice. In many cases, however, the attack seems to have come on while the patient was fasting.

Like appendicitis, pancreatitis is typically relapsing. In five of these nineteen cases, the relapse ultimately took the form of the acute necrosing or hæmorrhagic pancreatitis, ending in death. Chronic relapsing pancreatitis is therefore a dangerous disease, more dangerous certainly than appendicitis.

The presence of palpable *tumour* is rare. Only in two cases, so far as one can tell from the histories, has it been present, and both of these were thin women. On the other hand, it is quite frequent to find mention in the histories of an indefinite fulness or enlargement in the epigastric region. It must be remembered that from its deeply placed position a swelling of the pancreas must attain considerable size before it can be easily felt. Aortic pulsation, if unnaturally prominent, or too easily felt, is suggestive. In thin people this sign has but little significance, but in stout patients it should arouse suspicion.

The symptom of *jaundice*, in cases in which common duct stones are excluded, is of but moderate value in diagnosis. It was present only in nine out of nineteen cases, and it was characteristically slight and transitory. One may say of jaundice that it is remarkable rather for its absence in pancreatitis than for its presence.

Vomiting is present as a rule, although in three of the twenty-one cases it was absent. These, however, were of comparatively mild type. Chill is quite frequently found, and has some value in differential diagnosis. Emaciation is rarely seen.

Rigidity is usually remarkable by its absence, or its slightness, except in the later stages of the more acute cases, when the peritoneum becomes involved. It is, of course, present to some degree, but as the pain subsides, it requires fairly deep palpation to elicit muscular resistance. The respiratory movements are frequently not much limited. It must be remembered that the flanks and the lower parts of the abdomen on both sides are apt to be tender to palpation, although the area of maximum tenderness is in the epigastrium. It is fairly certain that this spreading tenderness is due to a mild peritonitis, set up by the diffusion of the pancreatic ferments along the preperitoneal lymphatics, which excite frequently a serous, or even sanguinolent, fluid in the peritoneal cavity.

To sum up: In the diagnosis we are inclined to lay the greatest stress on the situation of the tenderness upon finger palpation. The differential diagnosis must bring into consideration chiefly gastric and duodenal ulcer, cholecystitis, cholelithiasis, mesenteric embolism or thrombosis, renal calculus, high intestinal obstruction and neurosis. All these possess fairly certain signs and symptoms of their own, and give fairly clear histories, which we need not recount in detail.

Perhaps the most serious difficulty is found in differentiating the disease from gall-stones. When these are confined to the gall-

bladder, and the symptoms are due chiefly to cholecystitis, the diagnosis is best made from the location of the tenderness on palpation, which, in the one instance, is chiefly in the mid-line, and in the other, chiefly in the right hypochondrium. If, on the other hand, the stone is in the common duct, it may be impossible to be sure of the diagnosis. Indeed, as we all know, both conditions are not infrequently present coincidently. But even in such cases the tenderness will usually be found to extend over the mid-line and to the left, when the pancreas is involved coincidently with a stone, and only to the right of the mid-line, or in the mid-line, when stone alone is present. Of course, these somewhat finical differences can be made out, as already said, only upon careful and methodical finger-point palpation.

The same localized tenderness in the mid epigastrium, or a little to the left, is found also in cases of gastric ulcer; but here the tenderness is usually less diffuse than in pancreatitis, more localized to one point; besides which the clinical courses of the two diseases are fairly distinct. It is very unusual in gastric ulcer to get a history of recurring attacks of diffuse epigastric pain with fever. Nor in pancreatitis is it usual to find the rather characteristic aggravation of pain, shortly after the taking of food, as in ulcer. Duodenal ulcer is easily distinguished by its hunger pain and its relation to the ingestion of food. The pain of pyloric and gall-bladder adhesions may be difficult to exclude, but these practically never give rise to such acute symptoms as does the ordinary attack of pancreatitis.

So much for the clinical aspects of the disease. It remains to say a few words concerning the possibility of making the diagnosis by laboratory tests. To go fully into this side of the subject would require more space than is here at our disposal. The Cammidge test has excited a great deal of interest, and much has been written both for and against it. During the past five years a good deal has been done along this line in Dr. Bruère's laboratory at the Royal Victoria Hospital by Dr. Bruère, assisted at various times by Dr. McKenty, and the authors. A paper upon this aspect of the subject is under preparation, but we are permitted to say here, very briefly and very generally, that while it was found positive in the majority of cases of pancreatitis that we have examined, there were rather frequent exceptions, chiefly in the way of its being negative in definite cases of the disease, but also in its being positive in one or two cases in which the disease was not present. In spite of numerous recent articles unfavourable to the Cam-

midge test, we are inclined to attach to it some value, when it corroborates the clinical signs. It is, after all, a rather empirical test, inasmuch as we do not yet know how, or from what, the crystals are formed.

It is quite otherwise with the tests which are based upon interference with the external secretion of the pancreas, that is, the ferments which split fat, proteids, and starch. The presence or absence of these ferments can be definitely determined, and conclusions drawn from such observations are fairly sure. We have carried out with Dr. Bruère numerous tests, chiefly in the search for lipase and amylase. Unfortunately it seems to be the case that in the subacute and mild attacks of pancreatic swelling, excretion of the ferments into the bowel is not usually interfered with to such an extent as to be recognizable. The pancreatic swelling must clearly be considerable before the pancreatic duct is blocked. Once this does occur, however, it becomes possible, on the one hand, to demonstrate their absence in the fæces, and on the other, their presence in the blood, or rather, as is usually done, in the urine. In one striking instance, these tests clinched the clinical diagnosis of pancreatitis. It was in the case of a girl of twenty-one, who, since the age of fourteen, had had a number of attacks of epigastric pain with vomiting. Upon admission into Dr. Archibald's service there was discovered a tender mass corresponding to the situation of the pancreas. The clinical signs and symptoms were, it was thought, characteristic of subacute pancreatitis, although one consultant decided in favour of a gall-bladder lesion. Dr. Bruère examined the urine and fæces shortly after admission, and again about a week later, when the inflammatory symptoms had subsided. At the first examination trypsin and amylase were found to be almost absent from the fæces, while amylase and lipase were present in excessive amount in the urine. The second examination demonstrated a return to normal in this respect, coincident with a manifest subsidence in the pancreatic swelling. Operation showed a pancreas enlarged throughout to nearly three times its normal size, with a few scattered areas of fat necrosis around it. The gall-bladder contained a number of stones, but the common duct was empty. It was evident here that the swelling of the gland in the acute stage had been sufficient to dam back the ferments and force their absorption into the lymphatics and the blood. It was clear also that such a condition was apt to disappear rapidly with the subsidence of the inflammation, and consequently that these laboratory tests must be made at the proper time. A

day may make all the difference in their turning out positive or negative. Upon the whole, Dr. Bruère and ourselves are of the opinion that the test for the starch-splitting ferment offers the best chance of positive results. The results with the estimation of lipase, which has been worked out with some thoroughness during the last five or six years, are less encouraging, although by no means without promise; an article on this subject is under preparation. To sum the matter up, it may be said that the finding of amylase in the urine in undue amount is of strong confirmatory value, while its absence by no means excludes pancreatic swelling.

The pathogenesis of subacute and chronic pancreatitis is as yet comparatively unknown. Some claim that the swelling is due to the invasion of bacteria, either in the bile, or ascending from the duodenum. It is pretty certain that any such assumption is unjustified. Others assert that infections in the gall-bladder travel by way of lymphatics to the head of the pancreas and there set up the disease. This also remains little more than an assumption. It seems to us most probable that the cause of the swelling is more in the nature of a chemical irritant, and that most frequently this is introduced into the pancreatic duct by the entrance of bile. We know that bile, particularly if unmixed with mucus from the gall-bladder, does possess this irritating effect upon the pancreatic tissue. How it is forced into the pancreatic duct, in the absence of gall stones, is as yet unknown.

Treatment. What can be done for these recurring attacks of pancreatic swelling? It may reasonably be claimed that medical treatment stands here about on the same plane as the medical treatment of recurring appendicitis. Rest and limitation of diet are the chief indications. Usually the attack of pain subsides in a few hours or a few days, leaving a tender area in the epigastrium, which persists for several days to a couple of weeks. The patient is, however, very subject to a repetition of the attack, and it is our opinion that surgical treatment is indicated as soon as the diagnosis is made, or rather as soon as the diagnosis becomes one of probability. The analogy with appendicitis holds good in respect of the necessity of operation. In appendicitis most physicians now recommend operation in order to prevent recurrence of attacks, any one of which may end in perforation and general peritonitis. In the same way, with pancreatitis, operation is indicated because the patient is seriously exposed to a recurrence of the attacks, any one of which may take the form of the acute hæmorrhagic lesion, with fatal outcome. It is true that as yet we have not sufficient

experience to enable us to promise that operation will certainly cure. Nevertheless, very striking results have been already obtained, results which are quite sufficient to justify us in advising operation without hesitation.

What then is the operation which is indicated in these cases of chronic relapsing pancreatitis? The answer has been variously given. All are agreed that a drainage of the bile, away from its ordinary course, through the common duct, is the one thing for which we have at present any definite reason. But some have said that this should be done by cholecystostomy, draining the bile through a tube to the exterior. Others have said that it is better to do a cholecystenterostomy, draining the bile by a circuitous route into the intestine below. W. J. Mayo and others have advised the first for the lighter cases and the second for those in which the swelling of the pancreas is of such a nature as to bid fair to be of long duration. The results hitherto published for both of these operations have been, on the whole, most encouraging. Our own opinion is that the operation of choice is a cholecystostomy. In an address about three years ago before the St. John Medical Society (by E. A.) experiments on dogs were reported which went to show that a cholecystenterostomy did not divert the bile from the common duct, unless there was permanent obstruction in the common duct. With the common duct patent, the bile simply neglected the new route through the gall-bladder and took the old path. Now, as a matter of fact, the swelling of the pancreas in pancreatitis does not often obstruct the common duct, or at least does not obstruct it to the point of causing jaundice. And in those cases in which it does do so, the jaundice is very often slight and fleeting, disappearing within a day or two. Consequently, cholecystenterostomy, which is a much more serious operation than cholecystostomy, should be avoided because it not only adds danger, but also fails to do the work it is supposed to do. Cholecystostomy, on the other hand, can be depended upon to drain to the exterior from six to sixteen ounces of bile a day.

It may be asked, why is it that the drainage of bile does good, or apparently does good, in chronic pancreatic swelling? The reason usually given is that a gall-stone has lodged at the ampulla of Vater and has dammed back the bile into the pancreatic duct. The removal of the stone and the diversion of infected bile away from the common duct for a time, allows the pancreatic swelling to subside. While this is probably true for some of those cases in which stones are present, it hardly accounts for those in which the biliary

passages and the bile itself are apparently free of any lesion; and these form a considerable proportion of all cases. For these, some other reason has to be sought. Recent experiments carried out in the new Experimental Medicine laboratory at McGill have supplied what may at least be considered a clue to this problem. There exists a true sphincter at the outlet of the common duct into the duodenum; it has been demonstrated anatomically for many years; and one of us (E. A.) is engaged in an investigation of it from the physiological side. It has been found that this sphincter will resist a water pressure nearly six times that under which the secretion of bile in the liver takes place, and three times that of the expulsive force of the gall-bladder.

It is not unnatural to think that there may easily occur a spasm of this sphincter of the papilla which would bring the bile coming down from the gall-bladder and liver under exceptionally high pressure. Such an event might easily result in forcing bile back into the pancreatic duct, and so set up a pancreatitis. Under such circumstances, a diversion of part of the bile through a cholecystostomy opening would reduce the pressure in the biliary passages to such an extent as to preclude the forcing of bile into the pancreatic duct. In this light it may reasonably be claimed that the good effect of these operations lies chiefly in the fact that they reduce pressure in the biliary system, or avoid any excessive rise of pressure by virtue of affording a safety valve. The pancreatitis is therefore given a chance to subside naturally.

How long should such bile-drainage be kept up? We think it should be maintained until the pancreas has returned to its normal condition, if that is to occur at all. In cases of considerable swelling and hardness of the gland, three months are none too long. In milder cases, a shorter period may suffice. One patient with a marked condition was drained for ten days only; his attacks soon recurred.

In general, the cases treated by cholecystostomy have remained well for from one to twelve years.

THE NATURE OF SURGICAL SHOCK WITH SOME REMARKS ON ITS TREATMENT

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THE present series of experiments was undertaken with the idea of testing the value of pituitary preparations in surgical shock. This has necessitated some re-investigation of the latter subject and a criticism of current views as to the nature and origin of the condition described as surgical shock. All the experiments have been carried out under ether or chloroform anæsthesia, and in some cases morphia and curara have also been given.

The term "shock" is an old one, but attempts to define the true nature of the condition have accumulated considerably within the last few years. The work of Crile is well known. This author claims to have induced surgical shock in animals by various means, such as electrical stimulation of the vagus and sciatic nerves, crushing injuries of the limbs, manipulation of the intestines, and other traumata. He judges of the degree of shock mainly by the extent to which the blood pressure is depressed. Judging by this criterion it is obvious that, from the list of injuries given, the condition known as surgical shock may be due to many very different causes. Stimulation of the peripheral end of the vagus nerve will, of course, produce a lowering of the blood pressure, and stimulation of the central end of the cut vagus may cause a reflex depressor effect. Stimulation of the afferent terminals of this nerve will produce a similar effect. Thus, a distinct temporary lowering of blood pressure sometimes brought about by handling the intestines, one can imagine, might be due to a reflex depressor effect through the vagus nerve.* If, however, all the causes of surgical shock can be analysed as clearly as those referable to vagus inhibition, it is obvious that the need for the term "shock" would disappear. The matter is, however, by no means clear; it is, for example, exceedingly doubtful whether prolonged stimulation of the afferent fibres of the vagus will produce a permanent effect which can be

* As we shall see, however, the effect occurs when both vagi are cut.

called "shock." Again, I have only seen prolonged stimulation of the efferent fibres of the vagus cause death in animals when the blood pressure was already low from other causes.

It may be assumed that the term "shock" would not include poisoning by the anæsthetic* or depression of vitality from loss of blood. The term has been employed, by those who use it with any degree of exactness, to indicate a degree of depression which affects all the important vital functions and which seems in some

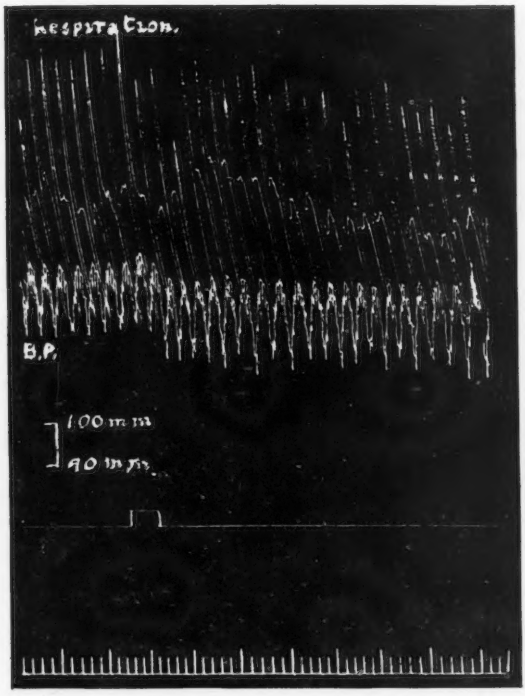

FIG. 1—Quick, clean incision of skin of abdomen. Slight corneal reflex present.

way, not yet understood, to be due to the direct traumatic effects of the operation or injury. The effects are supposed to be more liable to be manifested during certain abdominal operations.

* It may be noted, however, that Henderson applies the term "shock" to the condition produced by the injection of such substances as albumose or peptone. *Amer. Jour. Physiol.*, February, 1908, p. 141.

Henderson[1] has recently put forward a theory which co-relates surgical shock with a deficiency of carbon dioxide in the blood. A condition named "Acapnia" by Mosso (literally, smokelessness) is produced by the rapid respiration caused by pain, or the inhalation of ether or chloroform. Increased loss of carbon dioxide also occurs when the intestine is exposed, and more particularly when moist heat is applied. This kind of exposure in laparotomies on the human subject, Henderson states, is a frequent cause of surgical shock. He further states that it may be prevented by bubbling carbon dioxide gas through the saline solution in which the towels are moistened. His experiments certainly show that there is an increase of carbon dioxide exhalation under the conditions of warmth and moisture, though theoretically it is difficult to understand how the small amount of carbon dioxide contained in warm saline solution could be of any distinct benefit. Moreover, it has not been found possible to corroborate Henderson's statement that this method of treatment with carbon dioxide is beneficial.

Meltzer[2] says, "With regard to shock, one theory assumes that the injuries which produce shock disturb the equilibrium, causing a tendency towards inhibition. It certainly does not mean reducing the function to a single principle, to inhibition alone; it only means shifting the tendency towards inhibition. Stimulation of nerve fibres which usually cause excitation will still excite, and fibres which cause inhibition will still inhibit and probably inhibit even better than in a normal state."

In order to study experimentally the cause or causes of surgical shock, it is necessary that one should be able to induce the condition at will. It is perhaps difficult to determine when an animal is suffering from shock if the experiment is carried out under an anæsthetic in the ordinary way. If the animal be allowed to recover from the operation, then "clinical symptoms" may be called in evidence; otherwise we are bound to fall back upon the condition of the main bodily functions, circulation and respiration, as signs of the animal's general condition; or if death occurs, and no definite assignable cause be present, this would be usually attributed to "shock." The majority of recent observers seem to have attached most importance to the blood pressure as a test of the condition of shock.

I have attempted to induce surgical shock in dogs by the following means, many of which have been employed by Crile; viz., electrical stimulation of nerves, such as the vagus, the sciatic, and

the brachial plexus, for various lengths of time, crushing of these nerves, handling of the intestines and dragging on the mesentery, squeezing the liver, spleen, gall bladder, and pancreas, dragging on the stomach, dilating the foramen of Winslow with the finger, crushing of testes and ovaries, pressure on the abdominal sympathetic, the application of heat and cold of various degrees to the intestines and to the surface of the body.

Many of these stimuli, such as those applied to the central end of afferent nerves, cause the rapid respirations mentioned by

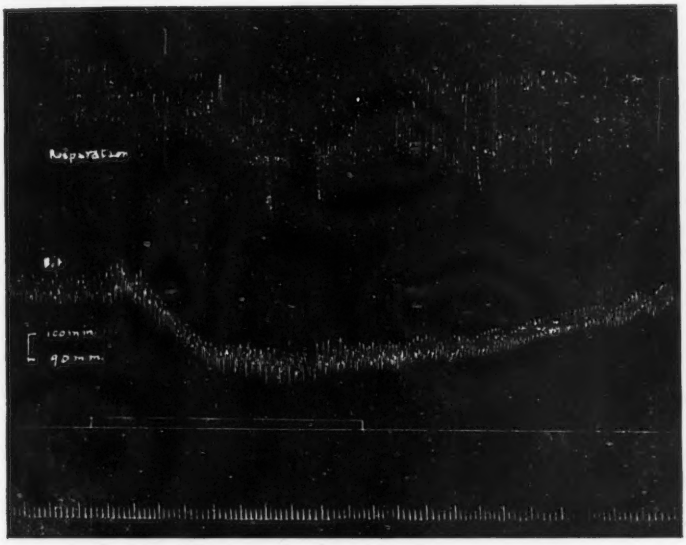

FIG. 2—Dog. Ether. Repeated incisions of skin of abdomen.

Crile and Henderson, but this rapidity does not continue throughout the whole period of stimulation. It becomes slower, and after a few minutes the respiration is actually less frequent than normally; later it returns to the normal. On stimulation of an afferent nerve there is usually a slight temporary rise in the blood pressure, very rarely a fall, and a condition resembling surgical shock has never, in the present series of experiments, been produced by these means. In dogs under anæsthesia, incision of the skin of the abdomen causes, with fair constancy, a small but distinct fall of blood pressure (Fig. 1). In very deep anæsthesia there is usually no change in blood pressure with a clean quick incision. If the incision, instead

of being a quick continuous one, be of a slow haggling nature, the fall of blood pressure may be considerable and last over a period of some minutes, as shown in Fig. 2.

Handling of the intestines or changing of the warm, moist towels almost invariably produces a slight fall of blood pressure which lasts about a minute. The fall is evidently not entirely caused by the warmth and moisture, but also by the touch of the towel and the manipulation incidental to putting it in place. A similar effect is produced on the same animal by handling of the intestine without the use of the towel.

Marked lowering of the blood pressure* on handling the viscera was at first thought to be in part due to a reflex inhibition of the heart through the afferent fibres of the vagus. This effect is produced, to a slight degree, on each occasion that a towel, wet or dry, hot or cold, is applied to the intestine. The effect is the same in a less degree as stimulating the central end of one cut vagus, the other being intact.† The lowering of the blood pressure on handling the intestine seems, however, to be a complicated phenomenon. It cannot be entirely due to reflex inhibition of the heart through the vagus, because it occurs when both vagi are cut. The precise result obtained upon the blood pressure by handling the intestine depends in fact upon the way in which the handling takes place. If a large bulk of intestine is compressed with both hands simultaneously, the blood pressure is distinctly raised, and this effect is obviously due to the squeezing of a quantity of blood out of the splanchnic area. When such compression is relaxed, the blood pressure immediately falls. This pressor result of steady compression of the intestine is apt to be replaced, after the application of warmth and moisture, by a depressor effect, which is, under the majority of conditions, the usual sequel of brisk handling of the gut. This latter depressor effect is exaggerated after a period of warmth and moisture, and it is perhaps more marked and occurs more certainly after section of both vagus nerves. The result is also quite definite after doses of nicotine sufficient to block the passage of impulses from the pre- to the post-ganglionic fibres of the vagus. Very large doses of nicotine abolish the effect. This seems to suggest that the phenomenon may be due to a vaso-motor reflex from the enteric system, comparable to the "law of the intestine" reflex obtained

* This does not invariably occur. In some of my experiments the blood pressure is unaltered even after handling for five minutes.

† With intestines not exposed there is invariably a rise of blood pressure on stimulating the central end of the cut vagus.

by Bayliss and Starling. It occurs when both splanchnic nerves are cut, but is almost abolished when the solar plexus is extirpated. One other possibility alone remains, viz., that the phenomenon is due to the stimulation of the vaso-dilator fibres in the gut itself. It is possible that by the mode of stimulation which is employed,

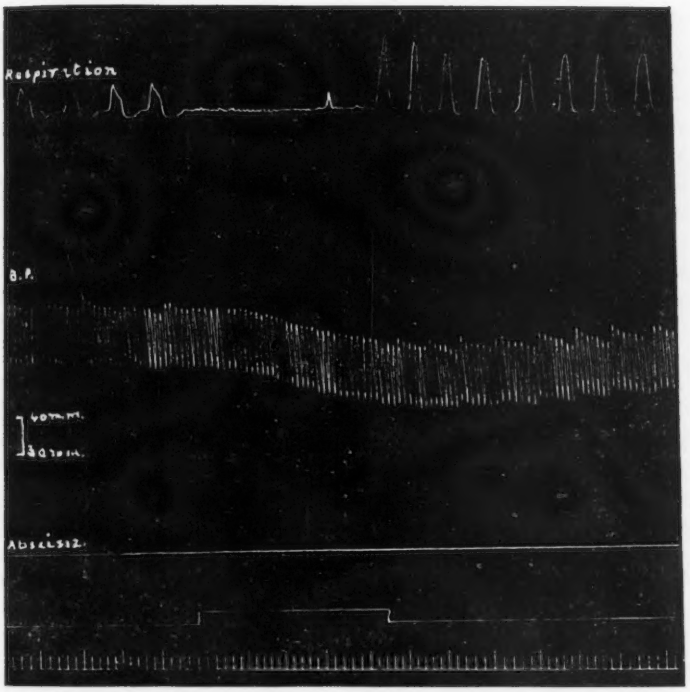

FIG. 3—Dog. 13 K. Ether. Both vagi cut. Nicotine. Kneading of intestines.

the vaso-dilator fibres might be more strongly stimulated than the vaso-constrictors. The lowering of blood pressure on handling the intestine would appear then to be due to several causes; first, and perhaps chiefly, it is to be attributed to a reflex vaso-motor influence through the splanchnics, a small part would seem to be also due to a reflex from the enteric nervous system, while a still smaller part is probably to be attributed to a purely local stimulation of the vascular wall of the intestine.

Another result which may occur on handling the intestine is an

inhibition of all respiratory movements, which inhibition lasts for a variable period and may lead to a rapidly fatal result through asphyxia (Figs. 3 and 4).

I have been able to fully confirm, as far as dogs are concerned, the statement of Meltzer[3] that, after the abdomen has been opened for some time, stimulation of the central end of the vagus stops the respiratory movements (Fig. 5).

In some cases, in dogs, where a condition which would presumably have to be called surgical shock has been induced, a post-mortem examination has not revealed any deficiency of chromaphil tissue in the adrenal bodies. This observation is recorded because Parkinson and Bainbridge[4] have stated that they found the chromaphil tissue absent in the adrenals in two autopsies in cases of death from post-operative shock. No study has, so far, been made of the abdominal chromaphil body in these conditions. Elliott,[5] however, finds that the irritation of a cerebral puncture and hæmorrhage and that of single ether anæsthesia are attended by a centrally excited loss of adrenalin from the adrenal bodies, through the splanchnics. I have, so far, been unable to confirm this result in dogs. In one of the present series of experiments, etherization and cerebral stimulation lasting for nine hours has failed to produce any appreciable exhaustion of the chromaphil tissue. Nissl, Mott, Sarbo, Marinesco, Dolly and Crile found alteration in sinal granules in conditions of shock. Changes have been observed by others, Mott, Sarbo, Marinesco.

When warm, moist towels are continuously applied, as in an ordinary laparotomy in the human subject, I have found, as Henderson states, that in experiments lasting some considerable time, from about two hours upwards, a steady, slow diminution of the blood pressure occurs, which may go on to a reduction of 70 or 80 m.m. Hg, and may continue in this manner for some time; but suddenly respiration stops, a rapid fall of blood pressure occurs and death results; a tracing similar to Fig. 4. being the result.

In some instances very little reduction of the blood pressure occurs even in the course of a long experiment, but ultimately a sudden fall occurs, and death ensues in the course of three or four to ten minutes. The respiration fails first; in one case this occurred six minutes before stoppage of the heart.* As pointed out above, this stoppage of the respiration may be the immediate result of the handling of the intestine, but a permanent stoppage from this

* Henderson mentions eight minutes as the length of this period in one of his experiments.

FIG. 4—Dog. 12·5 K. Ether. Intestines had been exposed for some time to warmth and moisture. At A dragging on mesentery caused fatal stoppage of respiration and fall of B. P.

cause has only been noted when the blood pressure was already very low from other causes. This effect may occur when both vagi and both splanchnics are cut, and after the largest possible doses of nicotine. In those cases where death did not occur in this manner and the animal was killed by other means at the end of the experiment, it may be argued that the experiment had not been carried on for a sufficiently long time or the condition of shock would have come about.

Although the condition of "acapnia," to which Henderson attributes all cases of shock, may be the cause in some instances, it would appear from this series of experiments that these are comparatively rare; though there can be little doubt that an optimum tension of carbon dioxide in the blood is a factor controlling both the normal activity of the respiratory and vaso-motor centres and the output of the heart.[6] The gradual or sudden lowering of blood pressure, leading to death, is not due to the anæsthetic, as great care was taken that there should be no overdose. But prolonged anæsthesia is no doubt a contributing factor in the final state of general depression.

Crile[7] refers to the shock-producing quality of different tissues, stating that the handling, incising, or dragging on certain tissues which vary in sensitiveness produces more shock than similar treatment of others. He states, also, that the degree of delicacy, skill, and rapidity with which a surgeon makes an incision or performs manipulations tends to cause more or less shock. Certainly a quick, clean incision causes little or, in some cases, no fall of blood pressure, while a number of strokes of the knife used to perform the same incision sometimes causes a severe, though temporary, fall. In the one case a lighter, but still efficient, anæsthesia is required than in the other, and this in my experience of the human subject seems to be an important factor, not only in the avoidance of depression due to the operation but afterwards. The same holds good in handling the abdominal organs, dragging on the mesentery, etc.

With the possible exception of the lowering of the blood pressure which occurs after an experiment lasting several hours, referred to above, the only other condition which could be called "shock," observed in the present series of experiments, is a marked fall of the blood pressure occurring in dogs under simple ether anæsthesia, when the thorax was opened for the purpose of recording the movements of the heart. In these cases, although artificial respiration was commenced before the operation of opening the chest wall was

begun, by the time that operation was finished the blood pressure had usually fallen about two-thirds of its volume, and a state of so-called "shock" was present. This was not the result of hæmorrhage, since comparatively little blood was lost. It may, however, have been due, to some extent at least, to attempts at spontaneous respiration interfering with the mechanical respiration, as I have

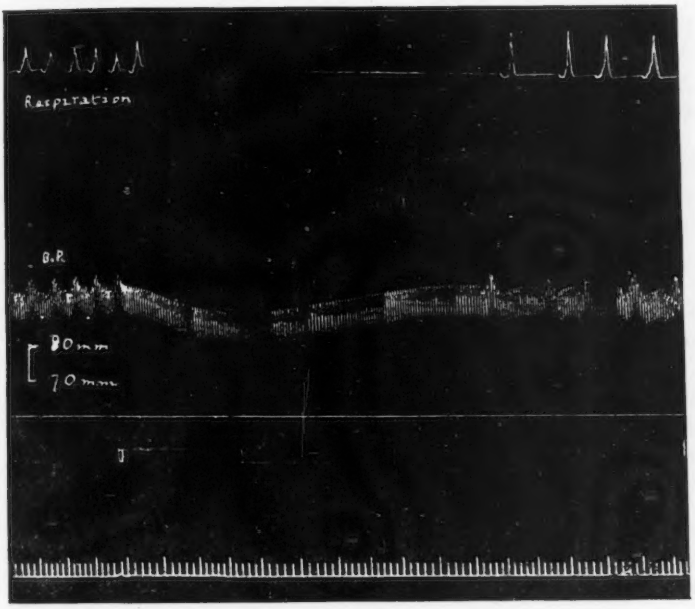

FIG. 5—Stimulation of central end of vagus (both vagi cut). Abdomen has been opened for some time.

never seen this fall under the same circumstances when curara was employed. In these cases the blood pressure was raised and remained at a high level for a long time if a dose of 1 c.c., 20 per cent. pituitary extract was administered (Fig. 6).

TREATMENT OF SHOCK BY MEANS OF SALINE INJECTIONS. It is not an uncommon practice in various depressed conditions to administer normal saline solution intravenously or subcutaneously. This is no doubt beneficial in some instances, particularly where severe hæmorrhage has occurred. There is, however, a danger recognized by some but often overlooked in making this a routine

practice. It does not seem to be a very scientific procedure to inject a quantity of fluid into the circulation, when little or no loss of blood has occurred, thus increasing the quantity in the vessels above the normal; and experience of some cases seems to show that the procedure may not only be useless but positively dangerous[8]; and in some of my cases where an injection has been given, death has resulted rapidly without any other apparent cause for it than the injection. Other observers have found changes in the liver cells, the red cells of the blood, changes in heart muscle and capillary walls of animals, fatty changes in the heart muscle and kidneys, and glycosuria.[9]

The throwing into the circulation of a quantity of sodium chloride, generally two to four drams, would cause a serious strain upon the kidneys, which in the case of renal disease might easily prove a source of considerable danger to the organism.

The Employment of Pituitary Preparations in Conditions of Shock. Pituitary extract is now prepared by several firms in convenient form for use and already sterilized. Injected into the circulation its effect is to raise the blood pressure, not so extensively or so rapidly as adrenalin (unless a very large dose is administered), but for a much more prolonged period; usually, it is said, for twelve hours. I have always found some fall, from the highest point reached, after fifteen to twenty minutes, but the pressure does not return to its previous level for at least some hours.

In order to prevent the exudation of fluid through the vessel walls when saline has been administered, it is desirable to give a previous injection of pituitary extract, or to mix the pituitary extract with the saline and inject the mixture. Experiments show that this proceeding is more efficacious than the use of saline alone. I formerly used adrenalin for the same purpose, but owing to its evanescent action (which, however, was overcome in some degree by mixture with the saline solution and administration subcutaneously, so that the absorption would be slow and the action correspondingly weak and continuous) it was not nearly so efficacious as pituitary extract.

In the course of these experiments I have used the extract prepared by myself from the powdered gland supplied by Merck, Burroughs-Wellcome's extract, and Parke, Davis and Company's. To obtain a certain effect the equivalent of 1 c.c., 20 per cent., as contained in one of Burroughs-Wellcome's capsules, must be used in a dog of average size. This corresponds to the dose recommended

for use in the human subject, which has never failed, in my experience, except once,* to give good results.

It has been noted in a large number of experiments that when adrenalin is injected after a previous injection of pituitary, the rise

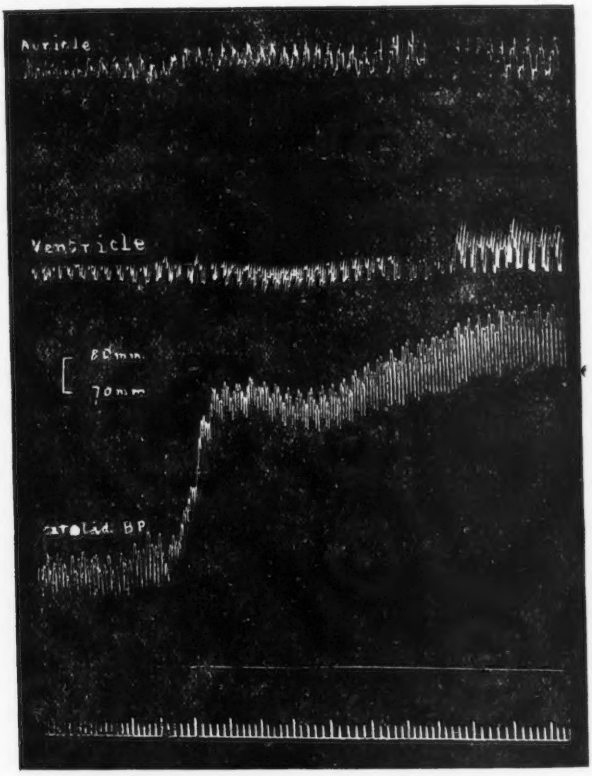

FIG. 6—Dog. 12·5 K. Ether. Opening chest causes great lowering of blood pressure, which is recovered from by dose of 1 c.c. 20 per cent. pituitary.

in blood pressure caused is much more lasting than if no previous injection of pituitary were given. This has been noted by another observer, but I have lost the reference.

* This case was one in which a fibroid (subperitoneal) had been removed from a uterus; the surface bled freely, and a dose of pituitary failed to stop the hæmorrhage or to cause uterine contraction. A large dose, however, might have had some effect.

SUMMARY

1. Under certain circumstances a condition of depressed vitality occurs in dogs under operation. This usually occurs after a prolonged experiment under anæsthesia, especially when the intestines are exposed and frequently handled. This depressed vitality is manifested by a lowering of the blood pressure and sometimes interference with the respiration.

2. Compression of a large bulk of intestine raises the general blood pressure, although brisk handling of the gut causes a temporary lowering of the blood pressure. These are transitory effects and not clearly connected with "shock."

3. As to whether increased escape of carbon dioxide from warmed and moistened intestine is an important feature in the production of "shock," as Henderson believes, the present series of experiments is inconclusive, but the slowly progressive depression of vitality cannot be prevented by treatment of the warm saline with carbon dioxide.

4. In but few cases has stimulation of afferent nerves produced a lowering of blood pressure, and in none a condition resembling shock.

5. If anæsthesia be not very deep, the abdominal incision may cause a lowering of blood pressure, which may be considerable and prolonged if the incision be also of this character.

6. A condition of shock develops after prolonged operative procedures, when the intestines are exposed to air or moist warmth, or occasionally after very severe operative procedures which are of comparatively short duration, but which interfere to some extent with respiration.

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9. HORT and PENFOLD: *Brit. Med. Journ.*, December 16, 1911, p. 1589, in addition to their own work quote Martin Fischer, Raum, Allbrecht, Rössle, and Hössli.

MEDICAL INSPECTION OF SCHOOLS

Report of the Special Committee of the Canadian Medical Association

THE first report of this committee, which was given at the annual meeting in Toronto in 1910, presented four recommendations, as follows:

1. That the Board of Education, Minister of Education, and Council of Public Instruction in each province should have an expert medical adviser, who should organize a complete system of medical inspection and supervision of schools and scholars.

2. That so far as possible the school medical service and the public health service should be coördinated.

3. That the system adopted by British Columbia in the "Act to provide for the medical inspection of schools, 1910," be approved by the Canadian Medical Association.

4. That in view of the vast importance of all matters affecting public health, a section on public health should be added to the permanent organization of the Canadian Medical Association.

The fourth of the above recommendations is the only one which has been put into practice. British Columbia still remains the only province in which the government has an expert medical adviser charged with the duty of organizing and inspiring a practical system of medical inspection and supervision of schools and scholars, and the only province which has placed adequate legislation on the subject upon its statute books. Moreover, where medical inspection is attempted, it has not been, to any great extent, coördinated with the Public Health Service. British Columbia is again an exception. But we now have a Public Health Section of this association, and perhaps since this has been done, the work of this committee should be merged in the work of that section.

During 1911 and 1912, the work of medical inspection of schools in Canada has extended and a good deal more money has been expended for this purpose. Thus, Toronto has increased the appropriation from $23,000 to about $40,000.

The Ontario Medical Council passed the following resolution with regard to the inspection of school children at its recent annual meeting: "That the council, in the interest of school children,

respectfully recommend to the Minister of Education the advisability of taking a physical census of the school children, with the view of comparing the health and physical condition of children in urban and rural districts; and in the meantime further recommend the training, as in England, of the students in the model schools, normal schools, and of faculties of education in such a knowledge of school hygiene as will enable them to recognize common defects and diseases of children." It is perhaps to be regretted that dental hygiene is not specially mentioned in this resolution.

There is an opinion slowly gaining ground in the community that medical inspection must be a part of the programme of any civilized state which wishes to preserve its power and government from century to century. If we are not to be overwhelmed by the unfit, the disabled, the feeble-minded, and the failures, we must plan out an improved and more practical system of education—one not quite so separated from the child's after life as bread-winner and citizen. The foundation of a better citizenship must be laid in school life, and no small part of it should be directed by those who have not only the knowledge required to recognize diseases and defects and their causes, and the energy and initiative to prevent the one and see that the other is treated, but also the scientific imagination to see what these defects, if not remedied or prevented, will mean to the community as well as to the individual in after life, and the patriotism to prefer devoting their lives to the public service rather than following a path more promising as to ease and wealth.

The following leading editorial from the Guelph *Herald* will serve as an example of the direction in which public opinion is moving. "Even those who are opposed to 'fads' or anything of a similar nature, must see that the days of medical inspection are rapidly coming. A few years ago the writer would have ridiculed, and did, the thought of having scholars attending our public schools medically examined from time to time. There can, however, be no question to my mind, speaking as one who formerly opposed inspection, that an inspection of our children attending school by a qualified medical man cannot fail to be productive of locating undreamed of physical drawbacks under which some children suffer and are consequently hindered. When once these are known, in the majority of cases, no doubt, a remedy would be supplied by the parents."

The tide is on the turn. Thousands of dollars are now appropriated for medical inspection of schools in the cities of Canada. But the Canadian taxpayer is no fool. He did not give that money

to pile up tons of statistics that no one will ever look at, or to provide a fixed income for the younger members of the profession. He pays this money because he is assured it will benefit the children of Canada. And if the expenditure does not result in healthier children, less absence from school, more freedom from contagious disease, the expenditure, which is at present experimental, will not be continued year after year. We should try, therefore, to make medical inspection as efficient as possible. Now is our chance. We may not get a second opportunity.

CONTROVERSY. The year has not passed, of course, without some controversy over the question of medical inspection of schools. In one instance there had been apparently a lack of tact and consideration for the teachers on the part of one or more medical inspectors. This is greatly to be regretted. It is quite enough to spoil the best system of medical inspection. The only reason that can justify the entrance of a doctor into the school is that the doctor can help the children and the teachers. Endeavours to establish the medical inspection of schools during the year have not been uniformly successful. Thus, in one city in Canada, a modest appropriation of some $2,000 was asked for to establish the work, and evidence was not wanting to show that the work was needed. One parent, who had three children attending school, successfully concealed for some days the fact that she had smallpox, and secreted herself in a large packing box when the medical health officer came to see her. But the grant, small as it was, was refused. It may be added that a number of the citizens of that city do not even believe in vaccination. Some objections have been urged in other cities, sometimes with good reason, as when it was shown that the medical inspector's duties were really performed, not by him, but by a nurse.

DEFICIENT CHILDREN. Interest in physically and mentally defective children is growing in Canada, and this may be regarded as in some sense a result of the work already done in this country in medical inspection of schools. It became necessary to hold an investigation into the management of an industrial school during the year, and this brought out the fact that at least one-third of the inmates were mentally defective. Further steps are about to be taken in regard to the care of these children. The appointment, by the mayor and corporation of the city chiefly concerned, of a number of persons to hold a conference in regard to the care of the feeble-minded in the city was another step of some consequence, as was also the visit to Canada, on the invitation of this conference, of Superintendent Johnston, of Vineland, New Jersey.

The address given by Professor Johnston (himself a native Canadian) will rank as an event in the history of the care of the feeble-minded in Canada. Professor Johnston pointed out that compulsory education and compulsory medical inspection of schools were the first steps to be taken, if we would find and care for the feeble-minded. That as long as children were of school age their education might be provided for largely by the municipality. That when these feeble-minded persons passed the limit of school age, they should, for their own good, and for the general good, be cared for and supervised by the government in a farm colony or other place where they may be made to be happy and useful and can do no harm.

In March, 1911, a class for mentally defective children was opened in Vancouver. A most interesting experiment has been made in Fort William during the year. The supervising principal has placed under the charge of a teacher, remarkably qualified for such work, a number of children who were either mentally deficient or sadly misunderstood as to their difficulties in the ordinary class. The result has been gratifying. Discipline, general comfort and progress have been greatly promoted by utilizing for these children the special gifts of a teacher who knew how to make the best of them and remove obstacles to their progress. This and other results of medical inspection of schools have been appreciated in the cities and towns where it has been tried.

Sanitary Conditions of Schools. It is well known to the many members of the association that the sanitary condition of our schools and school out-buildings is not always good. The sanitary conveniences are not what they ought to be in many cases in regard to privacy, cleanliness, and appearance. Surely this could and should be changed. The air in schools often is abominable. The medical health officer of Toronto reported adversely on the sanitary condition of Toronto schools, but apparently nothing has been done. We must look to the medical inspector of schools to change these things and to help to introduce a higher moral tone on all matters of health, and especially on those matters about which silence may be the best rule, but not the silence of cowardice, laziness, or indifference.

The Ontario government and the Quebec government have, during the year, passed legislation dividing these provinces respectively into some ten health districts and have appointed a health officer for each district. It is hoped that this new and important organization will be helpful in all health work and certainly in promoting medical inspection of schools.

It has been found in Toronto and elsewhere that the danger of a diphtheria epidemic, leading to school closure and a serious amount of illness, has been entirely averted by the prompt action of a medical inspector of schools. In schools cases of tuberculosis have been repeatedly recognized, and as our foreign population increases we are likely to see diseases hitherto unknown in Canada. At least one case of leprosy has been found in a Canadian school this year.

It may well be doubted whether our people are at all alive yet to the enormous importance to health of the condition of the teeth. The one fact *that we have not enough dentists to care properly for the teeth of our school children* should make every one eager to spread the knowledge that simple cleanliness of the teeth and the thorough mastication of solid and not too soft food will keep the teeth sound. The place where this fact can be taught and insisted on is the school, for the average home does not do it. In this connexion it is interesting to record that on his seventy-third birthday, March 16th, 1912, Dr. J. A. Adams, the pioneer of dental inspection in Canada, set out on a tour of the cities of Canada to introduce dental inspection.

Among the cities in Ontario which began medical inspection of schools in 1912 are Fort William and Owen Sound. Kingston and Niagara Falls have school nurses. The staff in Toronto has been greatly increased and now consists of nineteen medical inspectors and twenty-six nurses. The number of schools under inspection is about eighty and the cost this year of medical inspection is about $40,000. About eighty thousand tooth brushes have been provided by the Board of Education in a year, either sold at five cents or given away. Some attempt is also being made to pay for treatment for the children of the poor. Thus, in Brantford, a citizen gave $100 to provide glasses for those needing them. In Toronto the Board of Control gave $100 and the Local Council of Women $150 for the same purpose.

Sudbury and other places in New Ontario are impressed with the necessity for medical inspection of schools. The Sudbury *Star* pointed out in February, 1912, that "the need of medical inspection comes in Sudbury, and practically in any town in New Ontario, with more force than in most communities. Children often of eleven different nationalities attend the Sudbury schools to-day."

ALBERTA. The work began in 1910 under Dr. Dunn. It has increased very much, and during the present year Dr. Macdonald has been appointed medical inspector of schools at Calgary.

MANITOBA. In Winnipeg, medical inspection of schools is well established and favourably regarded both by the health authorities and the public.

NEW BRUNSWICK. In March, 1911, a measure passed the Legislative Assembly of New Brunswick making the medical inspection of schools permissive. A request for the legislation came from Moncton and it is known that in St. John many of the citizens favour it.

NOVA SCOTIA. Legislation on this subject was passed in Nova Scotia in 1907, and since then the superintendent of education, Dr. MacKay, has been endeavouring, with some success, to stimulate the rural school sections to take advantage of the law. As is well known, Halifax has had medical inspection in the schools for some time and some rural sections outside of Halifax have already established it. The school register now in use throughout the province has the following questions on medical inspection, which must be answered by the teacher in sending in the annual report.

> No. of pupils enrolled not belonging to this School Section.
> No. of children in the Section from 5 to 15 years of age.
> No. of those (120), who did not attend school during year.
> No. under 21 years in Section who are defective (a) in hearing, or (b) in seeing, who are not in attendance at the provincial Institutions provided for the Deaf and Dumb, and the Blind, in Halifax.
> No. of defectives in Section requiring to be educated in a Special School.
> No. of incorrigibles in Section requiring a Special School for Truants.
> How often has the school been inspected medically or dentally during the year?
> How many individual medical or dental inspections of pupils have been made during the year?
> How many cases have been recommended for medical or dental treatment?

This is certainly a great help to the movement.

QUEBEC. Montreal was the first city in Canada to establish medical inspection of schools. This was in 1906. Lachine and Three Rivers followed in 1910 and Westmount in 1911. In all these places the medical inspection of schools is under the Board of Health, and in 1911 at the annual convention of the Sanitary Services of the province of Quebec, a committee was appointed to draw up a practical plan for inspection. This committee is now preparing a report on the whole question. The medical inspection of schools in Montreal has been useful and successful.

SASKATCHEWAN. Regina and Saskatoon have both appointed school nurses within the year, and it is thought that the interest already aroused in the matter will lead to the appointment of a medical inspector of schools.

BRITISH COLUMBIA. With its excellent Act for the medical inspection of schools, and with the prompt action of Vancouver in establishing medical inspection of schools, and especially with the organization of the system in connexion with the Provincial Board of Health, this province occupies a favourable position in this work. New Westminster and South Vancouver, as well as the city of Vancouver itself, have school nurses at work.

HELEN MACMURCHY, M.D.,

Secretary to the Committee.

THE new Montreal Foundling Hospital will be commenced early in May. The hospital is to be situated on St. Urbain Street, which is not too far away from McGill University. The site has already been bought, at a cost of $40,000. It is expected that the building will cost between $60,000 and $70,000. The present hospital is not nearly large enough and the need of more accommodation has been keenly felt, particularly during the summer months, when the infant mortality is especially great. The new building will contain one hundred and twenty-five cots and nothing will be left undone to ensure its being thoroughly up-to-date and of the greatest possible usefulness. The work of the hospital is two-fold. Not only are infants given medical aid and attention, but the mothers are taught how best to look after the little ones; and, in this connexion, the training school for baby nurses is an important feature of the work.

THE TOXIC EFFECTS OF GASOLINE FUMES

By J. Guy W. Johnson, M.A., M.D., F.R.C.S. (Edin.)

THIS paper is based upon forty-two cases of gasoline poisoning seen at the Dorchester Street end of the Montreal tunnel, and a few experiments performed upon mice and dogs.

The tunnel consists of a shaft about fifty-five feet deep and about twelve feet square; from the bottom of this the tunnel proper runs a distance of about six hundred and fifty feet, the height being about eight feet, and the width about twelve feet. The ventilating apparatus consisted of a zinc pipe eight inches in diameter carrying air forced in by a fan; also compressed air to run the drills. This latter supplied by far the greater amount of air; and by releasing the air up against the face of the tunnel it forced the gases back to the shaft.

The source of the gasoline fumes was a gasoline motor engine, which was used to draw the cars of rock from the face of the tunnel to the bottom of the shaft. As long as the engine was not running the ventilating apparatus was sufficient to keep the air in the tunnel quite fresh, except for a few minutes after blasting; but within one hour after starting the engine the air would become foul, causing a throbbing and congestion of the vessels of the head and, if continued, headache.

On November 22nd two men were overcome by fumes and carried out of the tunnel. They had been mucking, and suddenly collapsed and became unconscious. I saw them within twenty minutes and they were then beginning to come to. The most notable feature of the cases was the extreme flushing of the face. The pulse was about one hundred to one hundred and eight, of good volume and tension. Respiration was rapid, about thirty-six, and deep. The knee jerk, plantar, and cremasteric reflexes were absent. The conjunctival reflex was present, as was also the pupillary reaction to light. The pupils were moderately dilated. The men were able to move their arms and legs, but not able to speak. There was also slight salivation. The men rapidly regained consciousness, and complained of very severe headache, chiefly in the frontal region. They returned to work in about an hour. There was no nausea or vomiting. Next day they felt none the worse for their experience.

On November 24th sixteen men suddenly collapsed within a few minutes of one another and without giving any warning of their condition. Those that were working with their heads low seemed to be most effected. The men were all brought to the surface as quickly as possible and I saw them within twenty minutes of the occurrence. They were in all stages of anæsthesia. Some had only muscular weakness, headache, and salivation, having recovered consciousness before I arrived. Others were struggling and shouting as in the second stage of ether anæsthesia; but not understanding anything that was said to them, nor had they any recollection afterwards of what had occurred once they had become unconscious. A few were absolutely unconscious, with perfect muscular relaxations, feeling nothing when a pin was stuck into their skin; a couple, besides being perfectly anæsthetized, had clonic spasms of arms and legs, coming on every few minutes and lasting a minute or so at a time.

The following conditions were common to them all: suffusion of their faces and hands; absence of most reflexes, except in those who had recovered consciousness; presence of conjunctival and pupillary reflexes; moderate dilatation of the pupils; pulse good, and never over one hundred and ten. Three of them not showing much improvement after one hour were sent to the hospital; but they did not stay there long. They all complained of severe headache on recovering. None had any nausea or vomiting. They did not return to work that day.

Next day, November 25th, the same gang were at work and eighteen men were overcome with the same symptoms. On both these occasions the engine driver was the most affected and took longest to recover.

Samples of blood were taken from the men and examined spectroscopically. These gave the bands for oxyhæmoglobin, and reduced perfectly with ammonium sulphide and with Stoke's solution, showing absence of carbon monoxide. The engine was then stopped and samples of air were taken from the tunnel. The report on these was that they consisted of natural air with traces of gasoline fumes and no carbon monoxide. The tunnel was then aired by pumping in compressed air for three hours, then stopping the pump for two hours to allow for collection of gases from fissures in the rock, and then another set of samples was taken. The report here was pure air. A dozen white rats were then hung in cages in the tunnel at different distances from the shaft and at varying heights from the ground. One died that night. This was the one

nearest the face of the tunnel and near the ground. The engine was then started again for a few hours, and samples of air taken once more. The report on these agreed with the first report.

On November 26th the engine was running and a man was set to watch the mice; and if they showed signs of becoming overcome, the men were to have been withdrawn from the tunnel. However, four men were overcome, whereas the mice were not. The engine was then stopped. But six mice died the following night. These were the mice farthest from the shaft. Post mortems were performed upon these, and their veins were found distended with blood and the right side of the heart very much distended. The blood was examined spectroscopically and only oxyhæmoglobin found.

The ventilating apparatus was then overhauled and repaired, and in addition a suction fan was placed at the bottom of the shaft to carry off the fumes which, being heavier than air, seemed to collect. On December 9th the engine was started again under these new conditions; but within a few hours two men were overcome, one of them to a very marked degree, his pupils being dilated, though the conjunctival and pupillary reflexes were still present. He had marked clonic spasms, and it was about two hours before he showed any signs of returning consciousness. His blood was examined spectroscopically, and showed only oxyhæmoglobin. The engine was then removed from the tunnel, since when there have been no more cases of men being overcome with these symptoms.

Experiments. I.—Four rats were used. These were placed in separate bell-jars and a small amount of gasoline was introduced. The following symptoms were noted: First, reddening of noses and gums; secondly, salivation; thirdly, restlessness; and fourthly, muscular relaxation and anæsthesia, coming on in one and a half to two minutes. The conjunctival reflexes were still present. Then came a stage when they had clonic spasms with perfect relaxation between the spasms. The rats were then removed from the gasoline fumes, and recovered in about thirty minutes; but three died without visible cause next day. Post mortem: their livers seemed to be very friable.

II.—Two dogs, small fox terriers. The dogs were put into a very large glass jar, and an ounce of gasoline was introduced into the jar, and the cover put on. The following symptoms were noted in order: reddening of nose, gums, and feet; salivation; restlessness and probable formication, as both dogs at this stage tried to bite their limbs furiously; muscular weakness; sudden gasping, with

perfect relaxation and anæsthesia. The dogs were then removed from the jar and the anæsthesia continued with a cone, as with ether. The anæsthesia was perfect. The conjunctival and pupillary reflexes were present, and sensation absent. The pupils were moderately dilated. The pulse was one hundred and twenty-nine, of good volume and tension; it was one hundred and twenty before anæsthesia started. Respiration was deep and rapid, twenty-six to the minute. Then clonic spasms appeared; and after fifteen minutes anæsthesia, without any warning, the respiration and heart ceased simultaneously; nor could they be made to return by any means.

A post mortem was immediately performed and the following conditions found: the heart had stopped in diastole and the right side was very much dilated. The veins all over the body were markedly distended, including the veins of the brain. There was marked venous congestion of the posterior parts of the lungs, and marked congestion of the liver, which in one dog was very friable. There was no mucus in the trachea.

From these experiments it will be seen that the symptoms in the animals were very similar to those in the men. The following are to be specially noted: the persistence of the conjunctival reflex, which never disappears; the marked venous congestion; the good pulse, which is not very rapid. After the stage of muscular relaxation appears there is a stage of clonic spasms; this I believe to be a danger sign. Absence of vomiting afterwards, and the severe headache following, are to be noted.

Box[1] reports two cases of petrol poisoning. He notes that in one the face was flushed and cyanosed, and that in the other the face was pale. Both had muscular weakness with shivering and spasms, but no vomiting. He notes that the pulse was rather small and fast, in this differing from my cases. They both recovered rapidly when brought into the air. Houghton[2] reports the case of a woman who was washing her hair with petrol in a small bath-room. She was overcome in three minutes. She was pale, the conjunctivæ suffused, pupils dilated; the pulse was thready (ninety), and felt as if shot were propelled beneath the finger. She was also delirious. It was four days before she felt well.

Petrie[3] reports a case of a chauffeur who, while working over a tank of petrol, was overcome and fell into the tank, where he remained for ten minutes exposed to the fumes. His face and hands were blue and he was foaming at the mouth, pulseless, and with eyes open and turned upward. A short time after he was removed

from the fumes he began to fight with his hands and feet, and his pulse gradually returned. He retched, but did not vomit. Later he became violent and tried to bite everybody. Then he complained of headache; but was perfectly well next day.

Dr. Fraser Gurd, in a personal communication, described a case in which he performed a post mortem upon a man who was found dead in a large tank that he had been cleaning with gasoline. Nothing was found but venous congestion.

Sollman[4] in his text-book says that in frogs gasoline causes purely paralytic symptoms. In mammals, when it is largely diluted (one to eight of alcohol), the anæsthesia may be kept up as long as two hours without noticeable bad effects. If carefully handled it produces no changes in blood pressure, pulse, or respiration. It is, however, rather unsafe, even in this concentration, since it produces its toxic effects *very suddenly*. The toxic effects from concentrated gasoline vapour consist primarily in very characteristic convulsions. These are best seen when gasoline is given in strong form without any other anæsthetic. The animal falls on its side, claws the air with all fours as if running, the pupils are widely dilated, the reflexes absent; spasms are intermittent and between them the dog is perfectly limp, except that his toes, tail, and eyelids continue to twitch. The respiration is first stimulated and then weakened. There is paralysis of the vagus, and then depression of the cardiac muscle and later of the vasomotor centre. Either the heart or respiration may stop first.

The following conclusions may be drawn:

Gasoline fumes are dangerous, and the final outcome is very sudden.

Gasoline engines are dangerous in tunnels where the ventilation is not extremely good, and should never be used in tunnels that are entered by means of a shaft.

References:—

1. Box, *Brit. Med. Journ.*, 1908, Vol. i, p. 807.
2. Houghton, *Brit. Med. Journ.*, 1908, Vol. ii, p. 1747.
3. Petrie, *Brit. Med. Journ.*, 1908, Vol. i, p. 987.
4. Sollman, "Text-book of Pharmacology," 1901, p. 445.

Several appointments have been made under the regulations for the new Research Scholarships in the medical department of the University of Toronto. Dr. C. Imrie is Junior Research Fellow; and Dr. Fletcher, Dr. McPhedran, and Dr. R. D. Armour are Senior Research Fellows. Dr. A. H. Caulfeild has also been appointed and will continue his work in tuberculosis, which was so unfortunately interrupted in Gravenhurst last spring.

DOMINION MEDICAL COUNCIL, OTTAWA, 1912

Editorial

THE OTTAWA EPIDEMICS

THE recent serious epidemics of typhoid fever in Ottawa, the second occurring within eighteen months of the first, were not merely a disgrace to that city, but a menace to the community at large. For such a calamity, in these days perfectly preventable, there can be no excuse. The conditions rendering these outbreaks possible in the capital of a country, of whose progress, in matters of less importance than the health of its citizens, we are so proud, are still under investigation. Meanwhile, the Committee on Public Health of the Commission of Conservation has issued a brief and vigorous report dealing with the broader aspects of such epidemics, pointing out their dangers to other communities than those directly visited, and constituting a powerful plea for the establishment of an efficient Federal Department of Health, which should have powers of control over local sanitation, water supply, and drainage systems.

The writer of the report is Professor Camac, of Columbia University, a man well qualified by training and experience to pass judgement. After describing the ways in which typhoid is transmitted by individuals, and accounting for the sporadic cases which appear from time to time in every large community, and which usually are imported from without, or else are due to the direct transmission of the bacillus from the sick to the well, being in the latter case chargeable to the negligence of the physician or attendants, the author proceeds to comment upon typhoid epidemics in general and the Ottawa visitations in particular. It will bear extensive quoting. "It is hardly necessary to mention the less common causes of such an epidemic or to describe its features. The two out-

breaks through which Ottawa has passed were caused by the commonest and best understood of all the causes of the disease—namely, the contamination of drinking water by sewage. In other words, that which is scrupulously avoided in the care of the typhoid case, was, by the contamination of the Ottawa water supply, brought about in the grossest possible way. While nurses were disinfecting discharges and sterilizing the utensils of those known to have typhoid, thousands of other persons, harbouring the germ in one or other of the ways referred to [typhoid carriers, walking cases, etc.] were transmitting organisms through the foul water directly into the alimentary tract of innocent victims."

The prevention of such a state of affairs is simple and comparatively easy. For years there has been no room for uncertainty. Give every city pure water and proper drainage, and typhoid becomes a rarity. "The typhoid epidemic to-day is an unpardonable crime against the world. It is scientifically punishable under the sixth commandment. By scientifically is meant that science has proven that typhoid epidemics are preventable by well known and thoroughly tested methods, which, if not adopted, render the authorities guilty of murder. The command to adopt such measures should be coupled with the charge, 'Thou shalt not kill.'"

The civic authorities of Ottawa have not yet put their house in order. The plans for a filtration plant that would render the recurrence of their epidemics impossible, have, apparently, not yet been finally decided upon. This might seem incredible, but it is the history of nearly every city on this continent. Possibly there is not one that could cast the first stone at her. Refusing to listen to reason, they have all dallied and procrastinated until compelled by bitter experience. The graveyards of all are filled with the victims of municipal ignorance or political corruption.

This is by no means a merly local, civic problem. It is a matter for widespread concern. Such epidemics, by spreading infection broadcast, are a national and international

menace. "That the Ottawa authorities did not realize the far-reaching power of their epidemics, is shown by the fact that they permitted their plan for the annual exhibition, held at Ottawa, to be carried out, drawing thousands to that city, *at a time when new cases of typhoid were still being reported.*" Further comment were superfluous.

The only adequate remedy is the creation of a strong Federal Department of Health, having in its service highly trained—and well paid—experts, unencumbered by petty political influences and local prejudices, and having control over matters of drainage and water supply. After all, the pollution of our rivers is logically the concern of the federal authorities, and the defence of the country is no more important than the health of its citizens. "Why," asks Dr. Camac, "should an army and a navy be maintained against possible destruction to empire or commerce while a national menace to life is met by partially prepared or ignorant local authorities? . . . Our present system is analogous to despatching a body of city police to meet an invading army." Modern sanitary science is a highly specialized branch of medicine and of engineering It is not necessary, nor at all possible, that every local health officer should hold the Diploma of Public Health. But what *is* necessary and imperative is that there should be a body of experts, whose services should be available over the entire country, and, moreover, whose services and recommendations could be imposed, if need be, upon an unwilling community. They might begin at home; but there are many Augean stables in the country, other than those at the government's doors.

The recent reorganization of the Health Boards of Ontario and Quebec was a step in the right direction. Indeed, it was only the intervention of the provincial officers during the crisis in Ottawa last autumn, that brought any order out of the chaos. But something more is needed; and it is gratifying to read that the leaders of the government, appreciating the necessity, have expressed their approval of the scheme, and

that active work is being done in the planning of a special Department of Health in the Dominion government.

THE PROGRESS OF THE ASSOCIATION

IN this number appears a list of the members of the Canadian Medical Association. Members who may observe any omission or errors in the list are requested to communicate with the secretary-treasurer. It includes the names of thirteen hundred and sixty-six physicians, of whom thirteen hundred and twenty-seven are practising in Canada, the remaining thirty-nine being resident in the United States or abroad. The total number of physicians in Canada, according to the recent edition of the American Medical Directory, is seven thousand two hundred and eighty-seven. Consequently the Association comprises in its membership between eighteen and nineteen per cent. of the physicians of the entire country, or, approximately, one in every five.

This is a satisfactory proportion for the Association to have obtained so soon after its reorganization upon a permanent, national basis, and with the JOURNAL just entering upon its third year. It is, however, only a beginning, and the time should not be far off when the Association will be able to claim that only one in every five of the physicians of Canada is *not* a member.

During the year the membership has increased over two hundred, and the work of organization has so far advanced that all but one of the provincial associations have now been brought into affiliation. Much still remains to be done in the way of organizing local and county societies, before the object which the Association has in view will be attained.

For the annual meeting, which is to be held in London in June next, active preparations have already been begun. Dr. N. H. Beal has been appointed local secretary. The meeting will be held from June 24th to 27th, inclusive.

THE International Congress of Physical Education is to be held in Paris from March 17th to March 20th, under the patronage of M. Fallières, president, and M. Loubet, ex-president of the French republic.

EARLY in each year it becomes the duty of the treasurer to send out sight drafts to the members for the collection of fees. This method was adopted as being the surest, quickest, and most convenient, not only for the treasurer, but for the members themselves. There are always, however, some who object to being presented with such a draft, and consequently the secretary-treasurer keeps a list of all members who thus object, and to them bills are sent in the ordinary way.

THE medical profession of London held a large and representative meeting at the Board of Trade Rooms on January 14th, and organized for the purpose of making arrangements for the meeting of the Canadian Medical Association, which will be held in that city on the 24th, 25th, 26th, and 27th of June. It is intended to make this a notable meeting of the Association, and the medical men of London are relying on the coöperation of the entire profession in Canada in attaining that object. Dr. McCallum, the president, and the profession in London, realize that a Dominion meeting, to be a success, entails a vast amount of work, and have made an early start. Dr. Moorhouse, who presided at the last meeting of the Association in London ten years ago, was made chairman of committees, and Dr. Norman Beal was appointed local secretary. No effort will be spared to make the meeting a success.

A COMMITTEE was appointed in 1908 by the Swedish Medical Society to report on the question of alcoholism in its relation to society. The report—a voluminous one which occupies three hundred and ninety pages—has now been published. The question of heredity, the relation of alcohol to poverty, crime, and disease, and the state control of alcoho-

lic beverages are discussed. The committee is in favour of restrictive measures confined to the abuse of alcohol rather than total prohibition, and has outlined a scheme whereby private interests in the sale of alcohol will be eliminated and its sale for consumption at home restricted. It is recommended also that stringent measures be taken against the drunkard, and that central and local authorities be established to regulate the trade in alcohol.

In a recent issue of the *South African Medical Record*, a picture is drawn of the present state of sanitation in Natal, which is far from pleasing. In 1911, it was decided that the Public Health Acts should be reënacted each year. Consequently, on January 1st, 1912, the Board of Health ceased to exist, the appointment of medical officers lapsed, and so far as sanitary matters were concerned the country was left without supervision or control of any kind. This condition has continued during the twelve months since elapsed and the dangers arising from insanitary conditions are spreading broadcast over the land, the coal mines and the coastal estates, where hundreds of natives and Indian labourers are employed, perhaps constituting the greatest menace. The labour of the old Natal government is going for naught, and "the result of years of experience and effort is being allowed to tumble to pieces owing to the dilatory tactics of the government in connexion with their public health policy." May some more efficient policy quickly be evolved!

An interesting question has arisen through the publication, in a recent issue of a popular magazine, of an article on the Schafer phylacogens. The article is a laudatory one and is intended to make known to the public the benefits to be derived from the use of Dr. Schafer's phylacogens. The point of discussion, however, is an ethical one. Should a popular magazine encroach upon the medical world to the extent of publishing an article—be it non-scientific or other-

wise—upon a medical preparation which is as yet in its infancy, in that the research work upon its therapeutic value is still more or less in the experimental stage; and what would be the probable result of such action? Messrs. Parke, Davis and Company protested against the publication, claiming that the result would be detrimental and would tend to prejudice physicians against the treatment. They contended that the publication of matter dealing with any medical preparation in a popular magazine at once opened the door to the suspicion that the remedy was being exploited for advertising purposes among the laity; and that the only legitimate means of expression on any such subject was through the medium of some medical journal. There is something to be said for this line of argument, but readers go too far when they assume that everything that appears in a newspaper or magazine is necessarily false or prejudicial to a new discovery.

FROM the December number of the *Western Canada Medical Journal* it would appear that the establishment of the "Dominion Medical Council" is devoid of all benefit to the medical men of the west, and, it is hinted, even fraught with danger to their interests. We are told that "any one desiring license from the Dominion Council must first obtain a license from the provincial; thus necessitating two examinations—except in the case of Manitoban graduates, whose degree is a qualification for license—and two fees." The object of the whole movement—first the "Roddick Bill," then the "Canada Medical Act of 1902," and now the "Dominion Medical Council"—is to establish a Dominion register and to make it possible for any one who has been enregistered therein to practise in any and every province in Canada. We are further informed that "As to Manitoba, it is questionable whether the delegates are properly elected as prescribed by the Act." The Act requires that two members be appointed from each province; and one member from each university or incorporated medical school having an arrangement with a university for the conferring of degrees on its graduates,

engaged in the active teaching of medicine, who shall be elected by the university or by such college or school. The two members elected from the province of Manitoba are Dr. J. S. Gray, Winnipeg, and Dr. R. S. Thornton, Deloraine; and Dr. J. R. Jones represents the University of Manitoba. The first meeting of the Dominion Medical Council took place in Ottawa, November 7th, and an account of this meeting was published in the December issue of the CANADIAN MEDICAL ASSOCIATION JOURNAL. The matter was referred to in the January issue of this journal and further information may be obtained by reference to that issue.

AS AN illustration of the widespread interest in the subject of tuberculosis, we think it proper to mention a contribution which has been offered for publication by Mr. D. Kogut, a working tailor in Montreal, quite apart from the value of his suggestion. Mr. Kogut's theory, based, as he says, upon common sense and not upon extensive investigation, is that "the food we eat contains tuberculosis and by a clean nourishment we can avoid it." From observations which he made at a tuberculosis exhibition "where good lectures were mostly given by professors in medicine," he concludes that "all starches and all calcined minerals are elements of bacteria, and so we need to have clean food without minerals." He notes that amongst animals "none of them have a mineral diet, and wonderful to relate we know of fish running away from salted water." The bacilli of tuberculosis, he points out, "are stained red on a blue ground, and blue on brown ground, so perhaps it is the white mineral salt which shines white." He explains the presence of tuberculosis in cattle on the ground that "the farmer gives salt to cows and the milk gets these microbes." The prophylactic measures which he advises are the avoidance of salt and diseased meat, and the use of "clean foods, such as bread, clean butter, and eggs." The interest in Mr. Kogut's contribution lies less in his theory than in the fact that he, and many others in a like situation, reflect upon the matter at all.

Book Reviews

DISEASES OF THE MOUTH, FOR PHYSICIANS, DENTISTS, MEDICAL AND DENTAL STUDENTS. By PROFESSOR DR. F. ZINSSER. Translated and edited by JOHN BETHUNE STEIN, M.D. With fifty-two coloured and twenty-one black and white illustrations; price, $7.00 net. New York: Rebman Company, 1912.

There is a distinction about all the books of the Rebman Company in subject, letterpress, and illustrations. The present volume is at once an atlas and a text-book, and the aid it gives in diagnosis and study is unmistakeable. The illustrations number seventy-three, on forty-six plates, each one of which occupies a page eight by ten and a half inches. The descriptions of the illustrations are singularly clear. The text is given on the high authority of Professor Zinsser, and every sentence is estimated with due deliberation. The book is a valuable addition to the equipment for dealing with diseases of the mouth, and will necessarily find a place in every library which aims to be complete. One could wish that the translator had added a note to explain what these "moulages" are to which he refers so frequently, three times on one page. They are probably models, and the word itself taken from the jargon of the studio.

A TEXT-BOOK ON THE PRACTICE OF GYNÆCOLOGY. FOR PRACTITIONERS AND STUDENTS. By W. EASTERLY ASHTON, M.D., LL.D., Professor of Gynæcology in the Medico-Chirurgical College of Philadelphia. Fifth edition, thoroughly revised. Octavo of eleven hundred pages, with ten hundred and fifty original line drawings. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, $6.50 net; half morocco, $8.00 net. Canadian Agents: The J. F. Hartz Company, Toronto.

The best product of the Philadelphia practice of gynæcology is embodied in this text-book. It is of extraordinary compass and all procedures which have been found useful are described. The illustrations are, as we think, unnecessarily copious and number ten hundred and fifty, all of which were drawn for this work and

betoken great liberality on the part of the publishers. The first edition was published in 1905, and in the succeeding ones the practice has been retained of giving directions so explicit that they may be intelligently followed. Little is left for the imagination or common sense of the practitioner, and the success of the book would seem to justify this plan. In each instance the author has described that method which appeared to him to be the best, and then he has added such variations as may be required in the management of atypical cases. Within the past two years much progress has been made in this department and a complete record of it will be found in this revision. To mention the additional matter in this edition would be really to write the progress of gynæcology since the last one appeared. We would call especial attention to the very full discussion of the influence of a "hormone," or internal secretion of the ductless glands in diseases peculiar to women. The advent of the "hormone" theory has made it necessary to revise thoroughly the chapter on the ætiology and treatment of many disorders. The book is entirely creditable to American medicine and American publication.

A Text-book upon the Pathogenic Bacteria and Protozoa. For Students of Medicine and Physicians. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia. Seventh edition, thoroughly revised. Octavo of eight hundred and seventy-eight pages, two hundred and ninety-three illustrations, a number of them in colours. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, $3.50 net. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

For more than fifteen years the present reviewer has watched this book grow through successive editions from the first to the seventh. It has increased from three hundred and fifty-nine pages to eight hundred and seventy-eight pages, and this increase may well be taken as an index of the progress of this branch of medicine during those years. It was always a scholarly book, and is so yet, with ample references and a masterly consideration of opposing theories. The work has arisen out of the laboratory, and principles are considered in the light of facts. The arrangement is orderly and the balance well preserved. On at least six occasions the present reviewer has mentioned this book with praise, and now, for the seventh time, the commendation is none the less sincere.

"McFarland's Pathology" is firmly established in the minds of students as a standard.

DISEASES OF THE STOMACH, INTESTINES, AND PANCREAS. By ROBERT COLEMAN KEMP, M.D., Professor of Gastro-intestinal Diseases, New York School of Clinical Medicine. Second edition, revised and enlarged. Octavo of ten hundred and twenty-one pages, with three hundred and eighty-eight illustrations. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, $6.50 net; half morocco, $8.00 net. Canadian Agents: The J. F. Hartz Company, Toronto.

It is easy to believe that in a book which contains over a thousand pages dealing with so limited a portion of medicine not much has been left unsaid. The book is no experiment, as it is the second edition which has appeared. The three subjects which are newly dealt with are, infection by the colon bacillus; diseases of the pancreas, and duodenal ulcer. For the illustrations the photographic method has been largely employed, and of these there are nearly four hundred, many of which are in colours. The subject of treatment comes in for full consideration. The work may well be described as a monumental one. It is published in the excellent form with which the Saunders Company has made us familiar.

PHARMACOLOGY AND THERAPEUTICS FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By HORATIO C. WOOD, JR., M.D. The J. B. Lippincott Company, Philadelphia, 1912.

Dr. Wood has given us a book which in many ways will be of use to both students and practitioners. For many reasons it would be of advantage to have a modern up-to-date text-book of pharmacology and therapeutics combined, but, as the author himself says, the science of pharmacology to-day is not what it was a few years ago. It has grown rapidly in importance, both to the student and the practitioner, and it will seem impossible to do justice to the subject in the confines of a short four hundred page book and at the same time to deal with the important subject of therapeutics. In the difficult task of classifying drugs with reference to both their pharmacological action and clinical uses, Dr. Wood has succeeded well.

Books Received

THE following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

X-RAY DIAGNOSIS AND TREATMENT. A TEXT-BOOK FOR GENERAL PRACTITIONERS AND STUDENTS. By W. J. S. BYTHELL, M.D., and A. E. BARCLAY, M.D., M.R.C.S., L.R.C.P. Illustrated. Price, $4.50. London: Oxford Press; Toronto: D. T. McAinsh & Company, 1912.

SURGERY AND DISEASES OF THE MOUTH AND JAWS. A PRACTICAL TREATISE ON THE SURGERY AND DISEASES OF THE MOUTH AND ALLIED STRUCTURES. By V. P. BLAIR, M.D. Illustrated. Price, $5.00. St. Louis: C. V. Mosby Company, 1912.

THE NUTRITION OF THE INFANT. By RALPH VINCENT, M.D. Fourth edition; illustrated. Price, 10s. 6d. net. London: Baillière, Tindall & Cox, 1912.

LIFE OF SIR WILLIAM TENNANT GAIRDNER, K.C.B., M.D., LL.D., F.R.S., Regius Professor of Practice of Medicine in the University of Glasgow. By GEORGE ALEXANDER GIBSON, M.D., Glasgow. Price, 10s. 6d. James Maclehose & Sons, 1912.

BUILDING A PROFITABLE PRACTICE, BEING A TEXT-BOOK ON MEDICAL ECONOMICS. By THOMAS F. REILLY, M.S., M.D. Price, $2.50. Philadelphia and London: J. B. Lippincott Company, 1912.

ANÆSTHETICS AND THEIR ADMINISTRATION. A TEXT-BOOK FOR MEDICAL AND DENTAL PRACTITIONERS AND STUDENTS. By SIR FREDERIC W. HEWITT, M.V.O., M.A., M.D. (Cantab.). Fourth edition, prepared with the assistance of HENRY ROBINSON, M.A., M.D., B.C. (Cantab.). Illustrated. London: Macmillan & Company, Limited, 1912. Toronto: The Macmillan Company of Canada, Limited.

Men and Books

By Sir William Osler, M.D., F.R.S.

XVII. The Young Laennec. The story of Laennec, discoverer of auscultation, and founder of modern clinical medicine, has been told and retold, but not all told. We know of the struggle, the great achievement, and the early death, but much remained jealously guarded by the family—"a very precious mine containing all kinds of treasures, but principally letters—numberless letters, from Laennec, from his father, from his grandfather, from his uncle—then college exercises; verses and humorous works; political and religious pamphlets; inedited notes on different subjects, medical and miscellaneous; prize-lists, diplomas, all sorts of official papers, genealogical documents, and even souvenirs." Some of these, so far as they relate to his life to 1806, are now laid before us in a charming brochure by Professor Alfred Rouxeau, of Nantes ("Laennec avant 1806," Paris, Baillière & Fils).

Born in 1781, at Quimper, of strong Breton stock on both sides, neither the father nor the mother of Théophile appear to have shown any special ability; the former, indeed, had careless talents, but no persistency, while the mother died before the boy had reached his sixth year. The outlook would have been dark for her motherless children, had not the uncle William, a professor in the medical faculty at Nantes, and at the time rector of the university, offered them a home, and an ideal one it proved to be for the young Théophile.

Guillaume-François Laennec, a cultured, highly trained physician "with a volcanic head, but a warm heart," quickly saw that his nephew was a boy of more than ordinary parts, and gave him the best training Nantes could afford. Keen at his books, but keen also at all games, the young student made rapid progress, and his studies were continued even during the horrors of the civil war. The ghastly guillotine was erected under the very windows of their house, to the basement and back rooms of which they had to flee to escape the shrieks of the victims and the noise of their falling heads! The uncle himself was a suspect, but doctors' heads had a value even in those terrible days. It is an extraordinary fact that the college (school) did not close, and the studies of "le jeune

citoyen Laennec," and of his brothers were not interrupted, but they had to participate in the famous Fête of the Supreme Being. Laennec became interested in Natural History, and made long excursions into the country to collect insects, plants, and birds. In 1795, at the early age of fourteen years and seven months, he began the study of medicine and was officially attached to one of the military hospitals as "surgeon of the third class," a position corresponding to that of surgical dresser. The civil war had necessitated the creation of new military hospitals, and the work of the medical school at the Hôtel Dieu (now the Temple of Humanity) had been interrupted, but dissections were continued at the Hôtel Dieu in a room beneath and communicating with one of the wards. Physics and chemistry were taught at the "Ecole centrale."

The devoted uncle watched with pride the growing talents of the young student, though at times distressed by his irrepressible tendency to compose verses and to spend long hours in his natural history studies. In the letters to his father and stepmother a delightful picture is given of the inner life of the lad at this period, with its hopes and disappointments. Money was scarce, the times were perilous; it was difficult to get the necessaries of life, and such luxuries as dancing and flute playing did not appeal to the hard-pressed uncle. The young Laennec found it hard to get anything from his ne'er-do-well father, to whom, after an absence of nine years, he paid a visit at Quimper (1797). The stepmother wished him to take up some business, and it was only a strong appeal on the part of Dr. Laennec that frustrated her designs: "For God's sake let him come back to me as I sent him to you, good, gentle and studious; let him pursue in peace a course of study which is good for his health, sufficient for his fortune and honourable for his reputation,"—and he had his way. The lad walked to and from Quimper to Nantes in four and a half days at the rate of about forty-one kilometres a day. There are sad letters telling of many trials and worries, lack of proper clothing, no money for books, or for his fees, and the uncle too hard-up to do anything, and the father too careless to answer letters. After following for five years the courses at the Hôtel Dieu and the work at the military hospital, Laennec passed the examination for the grade of "Officier de santé."

In 1800 a widespread insurrection occurred in the west, and for a time he served with the regular army in the field. Then followed a period of great anxiety and depression. The desire of his life had been to finish at Paris, but there were no funds, and a sixth year of hope deferred had to be spent at Nantes. At last the

fledgling took flight, and in 1801, with a light heart and light pocket, with only eight hundred francs, the young Théophile set out to conquer Paris. In those terrible days Nantes had been a hard school, but he had laid a good foundation in practical work, he had picked up a fair education, and above all he had developed an intense love for his work. He had given play to a poetic temperament and Professor Rouxeau gives a number of small poems, some of which indicate that a certain "Nisa" had stirred his Breton heart. With a group of old Nantes students and friends he was soon at home in Paris, and at once attached himself to the Charité Hospital, where Corvisart had already revolutionized the teaching of medicine. To-day Paris still follows this great master's method —the morning ward visit, and afterwards the amphitheatre lecture. We get a good idea of the state of medicine in Paris at this time from Joseph Frank's "Reise nach Paris und London" (Wien, 1805). Lectures on the doctrines of Hippocrates were still given three times a week, and one morning at the Hôtel Dieu he saw thirty patients bled out of the one hundred and forty-two in the wards of Bosquillon; but Corvisart was effecting a revolution, and teaching men to observe and compare at bedside and in dead-house. Here, too, was working the man who was to influence Laennec strongly, Bayle; and for a short time he had the inestimable advantage of the instruction and example of Bichat. At the Ecole Pratique he became associated with Dupuytren, and others of his teachers were Pinet and Cabanis. A good short-hand writer, he utilized this gift to make careful notes of lectures and reports on his cases.

In the *Journal de Médecine* in 1802 appeared his first important communication—"Histoires d'Inflammation de Peritoine," a clinical and pathological study on an affection at that time but little known.

In 1802, largely through the influence of Bayle, he became converted, and in 1803 joined the famous religious fraternity, the Congregation. In the letters to his father and uncle we can follow the progress of his scientific work, and papers appeared on the arachnoid, on a synovial membrane, etc.

In 1803, at the concours for the prizes at the School of Medicine, Laennec had a double triumph, taking those for medicine and surgery, and both in money—a welcome addition to his ever slender purse. One can imagine the delight of the uncle at Nantes—"He is a treasure, that boy!"—who predicted a professorship in a few years.

Leaving Nantes with a good knowledge of Latin, English, and

German, Laennec worked hard at Greek, and in 1804 wrote his doctor's thesis on the doctrine of Hippocrates. A partially written "Traité sur l'Anatomie Pathologique" of that period remained in manuscript until edited by Cornil in 1884. Working at clinical medicine and pathological anatomy, writing for the journals, an active participant in the medical societies, the young Breton of twenty-five had made a strong impression on his contemporaries; but life was still a struggle. He had begun to practice, and—have courage young men!—had only taken one hundred and fifty francs in his first year and four hundred in the second. But he had much capital in his brain-pan, and how the promise of his youth was fulfilled Professor Rouxeau has reserved for another volume.

XVIII. Mediæval Medicine. A book has recently appeared, which gives a good picture of the state of medicine in the fourteenth century—"John of Gaddesden and the Rosa Medicinæ" (Oxford Press). Dr. Cholmeley has here sketched the life and work of the earliest teacher of medicine in England. Gaddesden entered Merton College about 1294, and after finishing the course of Arts, studied medicine for a period of six years. "The candidate had to have 'read' one book of the Tegni, i.e., τέχνη of Galen, or one book of the Aphorisms of Hippocrates, 'pro majori parte.' These were to serve as far as 'theory went.' As regarded practical medicine, the candidate must have read one book of the 'Regimentum Acutorum' of Hippocrates, or the 'Liber Febrium' of Isaac, or the 'Antidotarum' of Nicolaus (Præpositus, of Salerno). A candidate must also have responded to the Masters Regent in the faculty for two years." So far as we know neither dissection nor hospital work was demanded.

John of Gaddesden taught in the university, and in the seventh year of his "lecture" wrote the treatise known as "Rosa Medicinæ," or, as it is more often called, "Rosa Anglicæ." After a far-fetched comparison of the five parts of his book with the five appendages of the rose, he modestly goes on to say:—"And as the rose overtops all flowers, so this book overtops all treatises on the practice of medicine, and it is written for both poor and rich surgeons and physicians, so that there shall be no need for them to be always running to consult other books, for here they will find plenty about all curable disease both from the special and the general point of view." Largely a compilation from Greek, Arabian, and Jewish physicians, the chief value of this work is in the personal observations which show the author to have been a shrewd, capable

man, though not a little given to boasting and to doubtful practices. Some of the pen pictures of disease are admirable, e.g., dropsy, and the description of paracentesis for ascites might be copied into a modern manual—the hole in the skin and in the peritoneum are to be at different levels, the fluid is to be drawn off slowly, never all at once—"lest the patient die suddenly." It is curious to note the recommendation of a diet with very little salt. The "Rosa Anglicæ" is most often quoted now in connexion with the red-light treatment of small-pox, with which Gaddesden cured the king's son. It was not original, but was an old woman's remedy of the time. An appalling number of medicines were used, and he gives a selection of charms and prayers. Curiously enough he is silent on astrological matters. Avicenna and Galen are the most frequently quoted authors.

Dr. Cholmeley has added chapters on the mediæval physician and on the study of medicine at Oxford in the fourteenth century, and has given a translation of the "Isagoge" of Joannitus, an Arabian physician of the ninth century, which formed an introduction to Galen's "Ars parva," one of the most popular of the text-books in the Middle Ages.

It is very difficult for us to appreciate, still more so to understand, the mediæval mind. To those interested, let me recommend Henry Osborn Taylor's "Mediæval Mind" (Macmillan and Company). The author, "a scholar, and a ripe and good one," has a warm sympathy and a keen art, which enable him to paint for us a vivid and intelligent picture of the period.

Among the contributions already made to the King Edward Memorial Fund for Consumptives, is one from Mr. John Lumsden, of Ottawa. Mr. Lumsden has given the Bellevue Hotel, which is beautifully situated at the foot of Lake Temiskaming and worth $55,000. The hotel has been used as a summer resort and is on the Canadian Pacific Railway, at no great distance from Haileybury. It contains forty rooms and a large dance hall, which could easily be converted into wards. If a hospital is established here, it will be of particular benefit to the miners in the neighbouring districts, among whom there has been a good deal of phthisis.

Retrospect of Medicine

1. A Study of the Endocardial Lesions of Subacute Bacterial Endocarditis, with Particular Reference to Healing or Healed Lesions; with Clinical Notes. E. Libman, *American Journal of the Medical Sciences*, September, 1912.

2. Glomerular Lesions of Subacute Bacterial Endocarditis. G. Baehr, *ibid.*

3. Further Immunological Studies in Chronic Pneumococcus Endocarditis. E. C. Rosenow, *New York State Medical Journal*, Vol. xii, No. 8.

THE clinical entity under discussion, subacute endocarditis, is characterized by an insidious onset, a long course, with, for the most part, a low and continued fever, and usually a fatal termination. Clinically it differs distinctly from the severely septic condition produced by endocarditis due to the ordinary virulent pyogenic organisms, viz., streptococcus pyogenes aureus, pneumococcus, etc., in which the symptoms of sepsis are extremely severe and a fatal termination is very soon reached.

The bacteriology of these subacute cases has been somewhat obscure. Most workers in routine pathological laboratories have obtained from the blood and from the lesions cocci which morphologically and culturally resemble both the pneumococcus and the streptococcus pyogenes. Schottmüller, in March, 1910, published five cases of subacute endocarditis, "endocarditis lenta," as he called it, from all of which he cultivated such an organism. "Streptococcus viridans" and "streptococcus mitior" are names which he has applied to it. Poynton and Paine have described in acute rheumatic fever, with and without endocarditis, a very similar organism which they have called "diplococcus rheumaticus."

Libman's article deals with a series of eighty-nine cases in which the endocardial lesions of the disease are described in their various stages. Baehr's article discusses the kidney lesions found in most of the cases in this same series. The paper by Rosenow discusses the bacteriology, the conditions, and reports the treat-

ment of a case by the use of an autogenous vaccine and autobacterial serum.

Libman in the last ten years has studied eighty-nine cases of the disease. In seventy-one positive blood cultures he obtained the typical organism, which he calls the "endocarditis coccus." Four cases yielded the influenza bacillus. He also studied eleven cases of what he considered to be the healed or healing stage of the same condition. These cases, though bacteria-free, presented the typical distribution of lesions described below, and most of them showed characteristic glomerular changes. As a basis of comparison he examined fifty-four cases of endocarditis caused by the streptococcus pyogenes, staphylococcus pyogenes aureus, and pneumococcus without finding in any case typical lesions.

The typical lesions in these cases are yellowish, greenish, or pinkish masses of vegetation attached to the mitral valve, one or both flaps, and usually involving the chordæ tendineæ and the auricular wall. The aortic lesions are not especially characteristic. In thirty-four cases studied at autopsy, the mitral valve was involved in twenty-five; the auricular walls in twenty-seven; the chordæ in twenty-eight, and the aortic valve in nine. Libman notes especially that these cases show a tendency to heal. In some instances organization is well advanced in parts of the lesion, and even the deposition of lime salts may occur before the lesions are bacteria-free. Libman divides the cases into three groups, according to the stage in which the lesion is found: (1) bacterial, (2) bacteria-free, healing, (3) bacteria-free, healed. He points to the fact that healed lesions do not ordinarily mean clinical recovery.

As healing takes place and lime salts are deposited, calcareous emboli are often set free and may cause infarct or embolic aneurysms in the peripheral vessels. These cases in which the bacteria are found during life usually die without becoming bacteria-free. Libman supposes that cases showing typical healed lesions with typical healed glomerular lesions in the kidneys probably are the result of mild and unrecognized cases. This is borne out by the fact that the glomerular lesions are fewer in number. He calls attention to the following points in the clinical aspect of the healing and healed cases: persistance of fever (temperature lower than in the bacterial cases) with signs of endocarditis, and occasionally with joint symptoms; weakness, anæmia, sometimes diffuse brown pigmentation of the face; sternal tenderness; failure of cardiac compensation.

Libman refers to ten cases of chronic infectious endocarditis reported by Harlitz in which the lesions described resemble those which he discusses, and to five by Schottmüller; also to seven cases reported by Jochman in which the typical organization was found and two of which recovered.

Baehr begins with a short description of the characteristics of the organisms in question which are more fully discussed by Rosenow. The glomerular lesions he describes consist of a swelling and hyaline change of one or more loops of the affected glomeruli. A hyaline or granular mass is found which may consist partly of a corresponding hyaline change of the overlying capsular epithelium. This material undergoes some fibrinoid change and eventually becomes organized. The result is a wedge-shaped area of hyaline connective tissue whose base is outwards, that is, away from the base of the glomerulus. Whole glomeruli are sometimes involved. In five cases in which the Gram-Weigert stain was employed, bacterial emboli were found in the glomeruli. The typical lesions were found in all but two of the twenty-five typical cases of the disease studied at autopsy, and also in most of the cases showing typical healed endocardial lesions. They were not found in one case of influenzal and one of gonorrhœal endocarditis, nor in fifty-four cases due to infection by the ordinary pyogenic cocci.

The organism which is ordinarily found in the cases of endocarditis under discussion has been variously named: "streptococcus viridans" or "mitis" (Schottmüller); "streptococcus tennans" (Hastings), and "endocarditis coccus" (Libman).

Rosenow states that the organism resembles the pneumococcus much more than it does the streptococcus, and should be considered an avirulent strain of pneumococcus. It is a diplococcus which grows more or less in chains, and possesses a very low degree of virulence. The growth in early cultures is dry and coherent. On blood agar plates the various strains produce a varying amount of green colouration and no hemolysis. Most strains ferment inulin. The tendency to form dry coherent masses disappears on cultivation, especially anærobic, and on animal passage, and they may grow exactly as do pneumococci that have been long under cultivation. This clumping property seems to be necessary in order that endocarditis may result. After repeated animal passage the virulence may be so increased that the animal injected dies of septicæmia or pneumonia exactly as after pneumococcus injection. This procedure has been carried out in the case of six cultures isolated from as many endocarditis cases, as well as one strain from a throat and one from an empyema.

In the case reported by Rosenow fifty-six blood cultures were made. The typical organism was obtained. Quantitative estimates made by plating ·5 c.c. of blood from the ear were controlled by duplicate and triplicate plates, and occasionally by plating from an arm vein. The relations between the temperature, the bacterial count, the phagocytic power of the patient's corpuscles, and the lysis of bacteria by the patient's blood, were studied. Eight doses of an autogenous vaccine were given, and it was noted that the phagocytic power of the leucocytes is no index of the amount of destruction of the bacteria, and also that the degree of intoxication depends on the number of bacteria destroyed. After smaller doses (twenty-five and fifty millions) of the vaccine there occurred an increased destruction of bacteria, and a decrease in the number of bacteria in the blood. The larger doses were not effective nor was the application of immune rabbit serum. Rosenow advises tonsillectomy in these cases, as similar organisms are found in the tonsil, which is probably the portal of entry.

A paper published by Thalmann in the September number of the *Centralblatt fur Bacteriologie* describes two cases of septicæmia caused by the same organism, without any endocardial lesions.

SUMMARY

Subacute and chronic infectious endocarditis is usually caused by an avirulent pneumococcus which has been variously named.

The endocardial lesions are usually characteristic, involve especially the mitral valve, auricular wall, and chordæ tendineæ, show a tendency to healing, and may go on to a healed (organized), bacteria-free condition.

Typical glomerular lesions occur, and are apparently produced by emboli consisting of the non-virulent organisms.

The portal of entry is probably the tonsil.

Autogenous vaccines in small doses apparently are of some benefit.

A. M. BURGESS.

AMENDMENTS have recently been made to the Montreal City Charter, which give power to the health department to inspect tenement houses and refuges at night. By measures such as these it is hoped to prevent a good deal of the overcrowding which is so frequent, and thus do away with its attendant ills.

Obituary

DR. J. G. CALDER, of Medicine Hat, died early in December while travelling with his family to California. Dr. Calder was a prominent surgeon in the west and had been a resident of Medicine Hat for over twenty years.

DR. H. B. ROSS, chief surgeon of the Jeffrey Hale Hospital, Quebec, died January 9th from pneumonia, after a few days' illness.

DR. W. J. WAGNER, of Toronto, died January 19th, in the sixty-fourth year of his age. Dr. Wagner was well known in Toronto, where he had practised since 1871.

DR. WOLFRED NELSON died January 15th, in the Hudson Street Hospital, New York, after a short illness. Dr. Nelson was the grandson of Dr. Wolfred Nelson known for the part he played in the Canadian Insurrection of 1837 and 1838, and the son of Dr. Horace Nelson, of Montreal, where he was born in 1851. A graduate of McGill, the first five years of his professional career were spent on the Isthmus of Panama, then came a few years of travel in Europe, and finally his return to New York where the remainder of his life was to be spent. Dr. Nelson was a prominent physician and a popular citizen, but he remained a British subject and was one of the founders of the Canadian Society in New York, of which he was at one time president.

THE medical profession has lost one of its most distinguished members in the person of Professor H. Hervieux of Montreal, who died January 4th, at sea, while coming home from Europe. Dr. Hervieux, taken away too soon, was only fifty years of age, and had won for himself a well-deserved scientific reputation in Canada and abroad. A member of the Laval Faculty of Medicine and one of its most learned professors, he has taught by his life, and has proven by his example, that nothing will lead to success as well as persistent work. He was a good friend to all and had a well balanced mind. He devoted his last years to a work which he had at heart above all, the reorganization of medical teaching at Laval.

Dr. Hervieux was gifted in a remarkable way to coördinate his fellow-workers' energies and lead them towards a set purpose of utility. He was both kind and wise; and therefore beloved and respected. He was a judicious and sincere adviser. "L'Association des Médecins de langue française," which numbers over five hundred members, had elected him president of its congress for 1913. He was the representative of Laval in the College of Physicians and Surgeons of the Province of Quebec, and his loss will be greatly felt in scientific and educational quarters, where his persuasive eloquence was always devoted to the good cause.

News

ONTARIO

THE number of contagious diseases reported during November last in Ontario exceeded by almost one hundred and fifty those reported in November, 1911. In consequence of the new regulations, cases of tuberculosis were more generally reported, but there are still many cases of the disease unnotified. Among the cases of a contagious nature reported were two hundred and eighty-seven of diphtheria, one hundred and forty-four of typhoid, one hundred and sixty-five of scarlet fever, and thirty-three of small-pox.

THE Sir Oliver Mowat Memorial Hospital for tuberculous patients was opened by the provincial secretary, Hon. W. J. Hanna, on Wednesday, December 11th. The hospital, which is the tenth of its kind, is pleasantly situated on a plot of thirty-two acres, eight of which are under cultivation; it overlooks the lake and is easily reached. The incipient cases will be placed in cottages, while the more advanced will be isolated in the upper part of the main building. As to funds, the people of Kingston have subscribed $20,000, the province $4,000, and the city council $2,000. Among other contributions were $2,000 from the Daughters of the Empire and $800 given by Major Leonard for the Rowland's Cottage.

HAMILTON is threatened with a serious epidemic of small-pox. A great many cases of the disease have already been reported and the situation is the more alarming in that there exists in Hamilton a strong prejudice against vaccination.

THE list of contagious diseases reported in Orillia during the past year is not an alarming one—five cases of scarlet-fever, three of diphtheria, two of typhoid fever, one of measles, and one of varioloid.

IN consequence of the necessity for additional accommodation, the board of management of the Ottawa Maternity Hospital has decided to build a fire-proof, concrete building, up-to-date in all respects and capable of accommodating from seventy-five to one hundred patients; such building to be erected in sections, from time to time, as the demands upon the hospital increase and when the necessary funds are subscribed by the public.

IN a *Health Bulletin*, issued December 27th, Dr. Hastings makes it clear that an additional filter is needed in Toronto. The plant now in operation is only intended to filter thirty-three million gallons of water a day, whereas the water consumed by the city each day amounts to forty-five million gallons. Consequently the filters are being overtaxed and there is no reserve capacity. The inclusion of North Toronto and the rapid growth of the city make it all the more imperative that some provision should be made to secure an adequate supply of filtered water. The bacteria removed from the water by the filters during November averaged 97·5 per cent.

ANOTHER Field Ambulance unit of the Army Medical Corps is to be stationed at Ottawa. The unit will be Number 22 and will be under the command of Major R. Law. The other officers will be Major T. H. Leggett, Captain W. P. Dillon, and Captain Charles Young.

THE Hopewell Hospital, which is being built on Porter's Island for the accommodation of small-pox patients from Ottawa, is almost completed.

DR. ARCHIBALD BRUCE MACALLUM, son of Professor A. B. Macallum, of the University of Toronto, has been awarded the Beit Memorial Fellowship for Medical Research. The fellowship is of the annual value of £250 and is usually held for three years. At present Dr. Macallum is working in Munich in Professor Frederick Von Muller's laboratory on metabolism in disease.

THE advisability of extending the system of medical inspection to the high schools in Toronto is under discussion. It is not pro-

posed to institute a daily inspection, but a weekly or even monthly examination would be beneficial. The examination of pupils taking part in gymnastic exercises and athletic competitions would be undoubtedly of great advantage.

SEVERAL cases of small-pox have been reported in Toronto and in Waterloo.

AN endowment of $15,000 has been promised to the Chambers Memorial Hospital at Smith's Falls by Mr. George H. Frost, of Plainfield, N.J. Mr. Frost has also promised to give a sum equivalent to any amount not exceeding $5,000, which may be subscribed for the purpose of endowment within three years from last December.

A BY-LAW was submitted to the ratepayers of Guelph, to provide $28,000 to be expended on the General Hospital—chiefly for building purposes. The by-law was defeated, however. A special committee has been appointed by the hospital board to enquire into the financial position of the hospital and to devise some means whereby it may be placed on a more secure financial basis.

AT the annual meeting of the Welland County Hospital Trust, last November, it was suggested that it would be better to build a separate hospital for tuberculosis at Fonthill than to add a ward to the hospital at Welland. The climatic conditions at Fonthill are more suitable for patients suffering from phthisis than are those at Welland and it would be cheaper to build a separate hospital; also, the government grant would be larger were a separate hospital built, and a gift of $2,000 has been promised by an Allanburg gentleman if this is done. A committee was appointed to enquire into the matter.

IN his annual report, Dr. Murray, of Owen Sound, the medical officer of health, puts forth a strong plea for the establishment of a municipal abattoir.

THE by-law to establish a filtration plant at Ottawa, which was submitted recently to the ratepayers, has been defeated. No solution of the water problem has been found as yet, but the matter is receiving attention.

THE position of medical officer of health for Ottawa is vacant. Applications for the position were invited up to the 10th of January, and were to be addressed to the chairman of the Board of Control.

MR. WILLIAM BAUSCH, of Rochester, at one time a patient in the Bellevue General Hospital, has contributed $1,000 to be expended on equipment for the new operating room of the hospital. This gift is made in appreciation of the attention Mr. Bausch received during his illness.

A BY-LAW is to be submitted to the people of Fort William to provide $15,000; the money is to be spent on improvements to the McKellar General Hospital.

QUEBEC

A REWARD of $200 is offered for the arrest of Dr. A. Judson McNeil, alias Dr. Edwin Smith. Dr. McNeil opened a private sanitarium some months ago at Franklin Centre, claiming that he was possessed of some specific cure for rheumatism. He formed a company for the manufacture of pills, which were to be an infallible cure for the disease. His claims were enhanced by the assumption of great religious fervour and many people were induced—particularly by the promise of a forty per cent. dividend—to invest their savings in this company. A few weeks ago Dr. McNeil disappeared, leaving the shareholders of his company with no knowledge of his whereabouts.

A LARGE amount of meat, fruit, fish, and so forth was confiscated during the past year by the Montreal food inspectors. The figures are: 145,335 pounds of meat; 70,785 pounds of fish; 182,836 pounds of fruit; and 205,000 pounds of ice. Seven meat-dealers were convicted for refusal to comply with regulations, and sixty-six fruit and fish dealers for the same reason. Seven hundred and three gallons of milk, contained in 646 cars, were confiscated, and 116 dealers convicted of negligence.

THERE were 9,685 deaths in Montreal in 1912, and 9,974 in 1911. Allowing for the increase in population, the death rate for 1912 is considerably less than for 1911, being 19·99 in 1912 and 21·19 in 1911 for every thousand of population. The infant mortality also has decreased; but it is still much higher than it should be.

The statistics show that tuberculosis is increasing rather than diminishing. In 1911, 737 cases were reported; in 1912, 895 were reported.

An appeal for funds is made by the Montreal Maternity Hospital. This hospital is maintained altogether by private subscription and the expenses have increased tremendously as the work has widened out. The present building has been in use since 1905 and is now much too small for the demands made upon it. Nine hundred and ninety-three patients were admitted in 1912, almost two hundred more than in 1911, when eight hundred and two were admitted; and last December three times as many patients were treated as in the same month of the preceding year.

At a meeting of the provincial board of health, held December 19th, the following district medical inspectors were appointed: Dr. J. A. Sirois, Bic, to have charge of the Metapedia district; Dr. Savard, the Fraserville district; Dr. Coullard, the district of Quebec; Dr. L. Parizeau, the district of Sherbrooke; Dr. J. R. Gauthier, the district of Valleyfield; Dr. Corsin, the district of Montreal, and Dr. Savary, the district of Three Rivers. No officers have been appointed for the districts of Chicoutimi, St. Hyacinthe, and Hull.

Thirteen cases of typhoid were reported in Westmount during 1912. There were also seventy-five cases of scarlet-fever, twenty-six of diphtheria, and twenty-six of tuberculosis. The death rate is 8·05 per thousand population, one of the lowest in the Dominion.

Measles was very prevalent in Montreal during December; there was also a good deal of scarlet fever and diphtheria.

SASKATCHEWAN

The following candidates have successfully passed the examinations of the Saskatchewan Medical Council: H. E. Alexander, W. N. Anderson, G. L. Cook, H. W. Dunnet, S. C. Falardeau, E. L. Finnerty, J. G. Forsythe, A. G. Garnett, R. J. Gardiner, O. Goodwin, H. Grey, G. W. Kells, W. N. Lavoire, H. H. Mitchell, R. H. McDonald, C. E. McCutcheon, R. S. Stirrett, C. G. Sutherland, E. L. Wyckware, R. H. Burrell, E. R. L. Ireland, W. J. Johns, S. Ross.

FOUR claims have been made on the city of Saskatoon for expenses incurred through lack of hospital accommodation. The claims were made by persons who had been refused admission to either the general hospital or the hospital for contagious diseases, lack of accommodation making it impossible to receive them. On the recommendation of the executive of the board of health, these claims were all paid.

A HOSPITAL to cost $450,000 is being built at Saskatoon. It will be controlled by a board, to be elected each year by the citizens, —two members to be appointed by the city council and one by public vote. The population of Saskatoon is now twenty-seven thousand. There are at present two small hospitals in the city, one a civic institution, the other an infirmary under the supervision of the Grey Nuns.

ALBERTA

A SATISFACTORY report for the past year is given by the medical officer of health for Lethbridge. One point worthy of note is the decrease in the number of cases of typhoid fever, eighty cases having been reported during the year as compared with one hundred and eight in 1911. As is the case in other places, Dr. De Veber complains that contagious and infectious diseases are not always reported by the physician in charge; this is true particularly of tuberculosis and typhoid. A severe epidemic of measles occurred in June and July, but the disease quickly died out when the schools closed for the summer vacation. The maintenance building of the new hospital is completed, but the pavilions intended for patients are not yet built; this is to be done early in the spring. The water mains have been extended during the year and the sewage disposal plant completed.

THE establishment of a medical library at Edmonton was discussed at a meeting of the Edmonton Medical Association on January 2nd, and a committee appointed to report on the matter.

THE compulsory vaccination of school children is a question which has been much discussed in Calgary. The matter has been taken up by Dr. Mahood, the medical officer of health, and Dr. Scott, the superintendent of schools, and the result is that every child, who has not already been vaccinated, is to be vaccinated at once or leave the schools.

SEVERAL cases of typhoid fever have occurred among the workmen engaged in building the Canadian Northern Bridge between Calgary and Ogden. The water supply is suggested as the possible source of infection and samples of the water have been sent to Edmonton to be examined.

A HOSPITAL has been established at North Edmonton It consists at present of four rooms, situated over a drug store, and it is intended for emergency cases. It is hoped that funds will be forthcoming in the near future which will make it possible to establish a more efficient hospital with at least thirty-five beds. The present establishment only contains six, and as there are a great many accidents in that part of the city, there is urgent need for more accommodation.

THE Red Deer Memorial Hospital doubled its capacity during 1912, at a cost of $13,500.

REDCLIFF has now a population of almost a thousand and possesses many large manufacturing concerns. It is suggested by the *Review* that the time has come for a hospital to be built and that the large factories in the town should be asked to subscribe.

DR. WILLIAM A. LINCOLN, medical superintendent of the General Hospital, Calgary, has resigned, with the object of taking post-graduate work abroad. He will leave the hospital about April 1st, next.

BRITISH COLUMBIA

FOUR hundred and seventy-four cases of infectious disease were reported in South Vancouver during the past year, sixteen of which terminated fatally. The most serious outbreak during the year was one of diphtheria.

NOTICE has been given by the provincial board of health that medical inspectors of schools are to be paid fifty cents for each pupil examined, and are to be allowed travelling expenses at a rate not exceeding fifty cents a mile for each annual inspection. If additional examinations are made on the written request of the board of trustees of the school in question, the inspector is to receive the same remuneration as in the case of an annual inspection.

THE corner-stone of the new building of the Royal Columbian Hospital at New Westminster was laid by the Hon. H. E. Young on December 11th. The building, which is four-storeyed, will give accommodation for two hundred and two patients and will cost about $250,000, which is rather above the estimate made. The hospital was first established in 1862.

AN attempt is being made by citizens of South Vancouver to have passed a by-law authorizing the establishment of a hospital there. A hospital committee was formed some time ago and a deputation waited on the Hon. H. E. Young. The deputation was promised a substantial grant subject to the approval of the rate-payers.

THE new wing of the Vancouver General Hospital is now completed and a campaign has been begun to provide the funds necessary to furnish the wards. The effort has already met with success, two contributions of one thousand dollars each having been made. The hospital receipts for the month of November were $14,702.10, while the expenses amounted to $20,310.42. The deficit for the year is over $20,000.

THE deficit of the Vancouver General Hospital for 1912 is more than twenty-seven thousand dollars, and the hospital authorities point out that quite one-fifth of the patients treated during the year came to them from beyond the city limits.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canadian Practitioner and Review, December, 1912:

The Public Health Journal, December, 1912:

The Sanitary Aspect of a Besieged Town . G. Carleton Jones.
Sewage Disposal by Oxidation Methods . G. J. Fowler.
The Dental Aspect of Medical Inspection of Schools . . . . . W. H. Doherty.
Schools as Factors in Preventing Infant Mortality . . . . . Henry Coit.
Saving Canadians from the Degeneracy Due to Industrialism in Cities of Older Civilization . . . . . P. H. Bryce.
The Carrier Question . . . . . W. H. Hill.
Trade Quackery in Medicine . . A. W. Wakefield.
Diet in its Relation to Disease . . H. B. Anderson.

Dominion Medical Monthly, January, 1913:

The Clinical Features and Treatment of Acute Perforating Gastric and Duodenal Ulcer . . . . . Ellsworth Eliot.
Why not hold these cases? . . . . G. R. Williams.

The Canadian Journal of Medicine and Surgery, January, 1913:

Some Impressions of the Clinical Congress of Surgeons of North America . . J. Milton Cotton.
Gynæcology at the Clinical Congress of Surgeons of North America . . . F. W. Marlow.

Le Bulletin Médical de Québec, December, 1912:

La Maladie des Caissons . . . J. P. Frémont.
Tubérculose renale . . . . . G. Ahern.

Le Montréal Médical, December, 1912:

L'Etiologie et le traitement de l'incontinence d'urine . . . . . Dr. Bouquet.

The Canada Lancet, December, 1912:

Chronic Intestinal Stasis . . W. Arbuthnot Lane.
Acute Post-Operative Dilatation of the Stomach . . . . . A. C. Hendrick.

The Western Canada Medical Journal, December, 1912:

The Diagnostic Significance of Gait . . F. Brodie.
Observations on the Operative Treatment of Fractures . . . . . J. A. Gillespie.

Medical Societies

THUNDER BAY MEDICAL ASSOCIATION

THE annual banquet of the Thunder Bay Medical Association was held in the Prince Arthur hotel at Port Arthur, December 5th. The officers elected for the year 1913 are: president, Dr. C. C. McCullough; vice-president, Dr. R. J. Manion; secretary-treasurer, Dr. Boyd; executive, Dr. R. W. Bucke and Dr. Eakins.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE fourth meeting of the society was held, Friday evening, November 15th, 1912, Dr. D. J. Evans, president, in the chair.

PATHOLOGICAL SPECIMENS. Dr. E. J. Mullally exhibited the following:

1. Trachea showing traumatic lesions, and lung showing experimental emphysema. From a male aged twenty-six, who was in the hospital for glioma of the cerebellum. An operation was performed to relieve this but respiration failed before recovery from the anæsthetic. Artificial lung insufflation was performed for ten hours. Note the damage done to the lower end of the trachea by the lower end of the tube inserted, and the extreme distension of the lung with petechial hæmorrhage.

2. Chondro-sarcoma of scapula. From a male aged thirty-eight, who was admitted for a rapidly increasing swelling of the left shoulder. The arm was amputated and the tumour is seen to have destroyed the lower two-thirds of the scapula. The tumour tissue is rich in cartilage, the central part is cystic and, when fresh, contained free blood.

3. Thoracic organs in a case of tuberculosis of the pericardium and other serous membranes. From a male, aged sixty-one, who had been ailing for a long time. The clinical diagnosis was myocarditis with hydro-thorax. Autopsy showed miliary tubercles of all the serous membranes examined, and adherent pericardium.

4. Lungs and liver in a case of actinomycosis. From a youth of nineteen, who had been ill six weeks with a mass in the gall-bladder region. There was an abscess round the appendix as well as the condition shown. The liver is seen to contain some round abscesses with arborescent borders and multiple central softenings.

CASE REPORT. Four unusual prostatic conditions, by Dr. W. Hutchinson. (1) Abscess; (2) Tuberculosis; (3) Calculus; (4) Stricture of internal urethral orifice following suprapubic prostatectomy.

PAPER: The paper of the evening was read by Dr. Little on "The use of obstetrical instruments with special reference to the use of forceps."

DISCUSSION. Dr. D. A. Shirres: One point in this paper particularly interested me and has done so for years, and that is the connexion of injuries at birth with the production of imbeciles, epilepsy, etc. Dr. Little mentioned that he had read in some report that imbecility and injuries to the brain occurred more commonly in long and protracted labours than with the use of forceps. At the outdoor department of our hospital, when we come across these conditions we ask the question regularly, "Was it a long labour, forceps labour, or a precipitate labour?" In my experience we have found a great deal more harm occurring to the child in precipitate labour, next the long and protracted labour, and least with forceps.

DR. A. G. MORPHY: I must say that in one respect I would take some exception to the concluding remarks made by Dr. Little, for this reason, that very often in the country confinements are conducted under very adverse circumstances and that, unless there is a very pressing indication for the use of forceps, I consider that in many cases it is much safer to refrain from using them. First of all, there is the lack of a proper dish in which to boil the forceps, the lack of a sufficient quantity of boiled water, the lack of sufficient basins, and all those things we are accustomed to find in plenty in either hospitals or good houses. In that respect only I would take exception. One question I would like to ask: all general practitioners know that occipito-posterior presentations are one of the bug-bears of this class of work. Now in these, after the practitioner has reduced or endeavoured to change the position around to O.A., and has only, as often happens, partially succeeded, how much reliance would Dr. Little place upon forceps to succeed in bringing about rotation to the full extent that is necessary?

DR. D. F. GURD: I have listened with a great deal of pleasure

and profit to Dr. Little's paper. I might say that in my experience I have used the forceps very often and increasingly often, for in the last sixty-five cases I find I have used them fifteen times. In the statistics found in the maternity hospital I was struck with the difference in the frequency of using the forceps in the public and private patients. I would like to have that explained. I might say that I have never used the axis-traction forceps, but have used axis-traction with my fingers and the forceps, carrying out the same idea, keeping the blades as far as possible from the arch of the pubes, and it has done very well. In speaking of the necessity for the use of forceps, a great many considerations have to be thought of besides malformations of the mother, that is, the angle being a very acute one. One other thing I have noticed lately, and that is, we have to deal with a more emotional class of people who stand the pain of labour very badly, and here I have had to use the forceps earlier and more frequently, else the disturbance would be unbearable. In one case, for example, I had a patient only in labour five hours, and I thought it wise to use the forceps as she could not control herself and distressed every one around her.

DEMONSTRATION. Notes of the stable fly, the Stomoxys calcitrans, by Dr. H. B. Cushing: I wish to present to the society this evening some specimens of the common stable fly which has attracted a great deal of attention lately as being the probable carrier of infantile paralysis. This disease was thought for some time to have an insect carrier, because (1) it is caused by a filterable virus, and a great many similar diseases have an intermediate host, e.g., yellow fever, typhus fever, dengue, and rabies. (2) It is a strictly seasonal disease, occurring in the summer and fall months and ceasing invariably at the onset of cold weather. (3) It is not directly contagious, e.g., in schools or hospital wards. (4) Cases occur where there is no history of direct exposure. (5) Epidemics occur chiefly in small towns and villages and not in densely populated centres. The stable fly recently became suspected of being the carrier for the following reasons: 1. It is most abundant at the special seasons and in special localities where the epidemics of poliomyelitis occur. 2. Live specimens may be secured all the year round, so accounting for the exceptional cases occurring at unusual seasons. 3. Its geographical distribution,—being found over the whole of the northern hemisphere and probably all over the world. 4. It has already been proved to be a carrier of filarial disease in horses. 5. It is able to travel considerable distances and so cause sporadic cases. 6. Recent experiments on monkeys seem

to prove that it is capable of conveying the disease. Professor M. J. Rosenau, at the recent International Congress on Hygiene, at Washington, reported that he had caused the disease in six out of twelve monkeys by exposing them to infected flies. John F. Anderson and Wade H. Frosst more recently published in the Public Health Report of New York that they had caused the disease in three monkeys by exposing them to the bites of stable flies which had recently bitten monkeys suffering from poliomyelitis. The stable fly is universally abundant, expecially in the vicinity of horses, it bites human beings frequently, and in fact most of the larger animals. It breeds chiefly in horse manure. It is nearly always mistaken for the house fly, which it very closely resembles, as the specimens demonstrate, but from which it may be readily distinguished by the following characteristics: it is furnished with a beak or proboscis and is able to bite; its bite is slightly painful, but causes no after inflammation as in the mosquito bite; its abdomen is wider and shorter and its wing area a little larger in proportion; the markings of the body are different; the house fly rests on a perpendicular wall with its head downwards towards the floor, while the stomoxys rests upon the wall with its head towards the ceiling.

CASE REPORT: Duodenal obstruction simulating pyloric stenosis, by Dr. G. E. Armstrong and Dr. F. M. Fry. Dr. Fry read the case report.

THE fifth regular meeting of the society was held Friday evening, December 6th, 1912, Dr. D. J. Evans, president, in the chair.

PATHOLOGICAL SPECIMENS: Exhibited by Dr. A. M. Burgess.

1. Specimen shows brain from a young man admitted to hospital with a diagnosis of hysteria. It was finally concluded that the condition was cerebral—he had eyesight trouble and a discharge from both ears. On consultation our neurologist and otologist made a diagnosis of abscess of the brain, probably the cerebellum—he could not put his fingers together, etc. Dr. Elder operated, going in on the left side of the cerebellum, and found nothing. He then opened on the right side behind the ear and found pus; this wound was opened and drained several times, but the man kept getting gradually worse and eventually died. At autopsy the brain presented on the left side a more or less fragmented appearance with a hernia at the point of the first operation where the brain protruded through and became fragmented. On the opposite side

there was a large abscess in the right lobe of the cerebellum. The left cerebral hemisphere was covered with an acute inflammatory exudate and a large mass of purulent material escaped; between the two hemispheres was thick greenish yellow pus. The patient presented a double optic neuro-retinitis. The explanation seems to be that the abscess of the right lobe had penetrated to the meninges and crossed to the left side under the tentorium simply because the patient was always lying on his left side on account of the operation wound on the other side and that, through gravity, it must have penetrated the tentorium and caused a unilateral meningitis on the left hemisphere. Both middle ears contained pus and the roof of the tympanic cavity on the right side was necrotic and evidently had been penetrated by the pus. The lateral sinus on that side was not at all affected and there was no evidence of thrombosis.

2. Free, floating, unattached tumour. Dr. J. R. Waddell described this specimen. The man came from the Maritime Provinces complaining of a mass in his abdomen, freely movable. It had grown slowly for twenty-three years, he had practically no symptoms, although chronic constipation had been complained of for years, especially when the tumour gravitated to the left side lying over the sigmoid colon. During the daytime it was in the pelvis, at night it was easily movable. Several doctors had treated him, each giving a different diagnosis. The tumour was removed. In cutting it open a hard calcified nucleus can be seen surrounded by a softer area of tissue. Most of the wall consists of fibrous tissue arranged in concentric layers. In a search of the literature I find only one such case reported and that was by Cunningham, of Boston, four or five years ago.

3. Multiple metastases of a rapidly growing tumour. It invaded practically all the organs. The patient was a young Chinaman with little or no clinical history. At autopsy tumours were found filling the liver, kidney, spleen, heart wall, bone marrow, dura, stomach, thyroid; tumours practically everywhere. The stomach showed a perforation which had given rise to a fatal peritonitis. In the sections of the liver there are not in the tumour nodules any definite necrotic areas or pitting, such as you expect in ordinary cases of carcinoma, and the slides show that carcinoma is not the diagnosis in this case. A blood count post mortem showed about fifty per cent. lymphocytes and three per cent. polynuclears, the rest of the picture is made up mostly of large mononuclear cells with and without granules. The diagnosis was lymphoblastoma—malignant lymphoma.

LIVING CASE. Bullet wounds of the large and small intestines. By Dr. A. R. Pennoyer. This young lad, C. C., aged fourteen, was admitted to the General Hospital, August 22nd, 1912. While driving a milk wagon that same morning a couple of boys with a rifle attempted to shoot holes in his milk cans and on giving them chase one of the boys deliberately fired two shots at him, the second taking effect and bringing him down. He was admitted to the hospital at 10.30 a.m. with a punctured wound one inch below and one inch posterior to the anterior superior spinal ilium; he had vomited once before reaching the hospital. Anti-tetanic serum was given and an *x*-ray taken which failed to reveal the bullet. At this time, although very pale, there was no evidence of peritonitis. At 4 p.m. the patient was much paler, pulse rapid, beginning abdominal distension and widespread tenderness and rigidity, frequent vomiting, thoracic breathing, and all the signs of a beginning peritonitis. The abdomen was opened in the middle line and one perforation of the sigmoid and six of the small intestine were found and closed with Czerney-Lembert sutures. The only explanation of the solitary perforation of the sigmoid was that the bullet must have entered through the meso-sigmoid. The bullet was found near the branch of the mesenteric artery which was still bleeding. The patient's condition at this time was so grave that the abdomen was closed with through and through sutures and he was returned to the wards. The convalescence was smooth and complete. In my experience these cases are particularly fatal, and for this reason I have felt justified in bringing this one before you.

DEMONSTRATION of an artificial pneumothorax apparatus, by Dr. E. W. Archibald.

PAPER. The paper of the evening was read by Dr. E. M. von Eberts and Dr. W. H. P. Hill on "Free transplantation of fascia—experimental results—clinical application."

DISCUSSION. Dr. E. W. Archibald: I think the Society has reason to congratulate Dr. von Eberts upon this very interesting piece of work, which opens up a comparatively new field. It is proved beyond a doubt that one can transplant fascia and expect it to heal in without trouble. I have followed this line of work in the literature and in the laboratory; and also in two clinical cases I have used the fascia transplantation for a particular purpose with success. I refer to the closure of the pylorus in cases of gastro-enterostomy. I believe very strongly that the pylorus, if patent, when one does a gastro-enterostomy, should be closed, and this is

usually accomplished by the inturning with rows of Lembert stitches of the pyloric or pre-pyloric region. When one examines closely the late results of such a procedure, as we do in the laboratory, one finds frequently a dilatation of the pyloric opening and one can readily see that any such procedure is apt to be insufficient. Consequently I adopted from a German source the idea of taking a piece of the anterior sheath of the rectus and tying it like a string around the pre-pyloric region, thus closing the pylorus. In two or three dogs it has succeeded perfectly, and in two human cases also, as far as one can tell, even though in one case it was complicated by some infection. I would suggest that this is another line in which free fascia transplantation might be used. The microscopical examination of the pyloric region in one of the dogs later on showed a narrow cicatricial scar which had become incorporated with the serous covering of the stomach. Concerning the covering or repairing of peritoneal defects, Dr. von Eberts' results show that adhesions are extremely apt to occur. It appears to me that this corresponds very well with my laboratory experience of a few years ago, when in carrying our a research on the prevention of peritoneal adhesions I used Cargyle membrane, which is the tanned peritoneum of the ox. These tests were uniformly unsuccessful, and that would lead me to expect a lack of success in transplanting free fascia into peritoneal defects. The fate of transplanted fascia in all other places is that it becomes incorporated with neighbouring structures; this is its value and it is one of the reasons why we transplant it. Consequently it is difficult to expect that for a peritoneal defect of any size the fascial graft can remain free of adhesions. In my experiments a mixture of gelatin with formalin gave the best results. In conclusion I think the society's thanks and felicitations are due Dr. von Eberts for bringing before it so timely and so excellent a piece of work.

Dr. von Eberts: I think one gets much better results where the bandages are removed early. If there is proper implantation, the use of the limb will not cause rupture of the union and will certainly prevent that atrophy which follows fixation and very materially lengthens the period of disability or loss of function. The use of fascial transplants in the reinforcement of injured vessels and in the protection of nerves that might be exposed to pressure or injury has been suggested, and experimentally fascia has been used successfully in this way. It has also been used as a suture material in the place of wire in the fixation of fractures.

Case Reports: Illustrated by *x*-ray plates by Dr. A. H. Pirie.

Case reports by Dr. J. R. Fraser. The three case reports that are being considered this evening deal chiefly with conditions in which the diagnosis was materially assisted by the use of the *x*-rays.

1. Gastric ulcer with hour-glass contraction: A woman aged forty-eight had suffered from abdominal symptoms for seven years; she had been treated at first for enteroptosis and remained well for nearly three years. Four years ago her symptoms returned, with indigestion, epigastric pain, and vomiting. These attacks recurred from time to time with exacerbations and remissions, until a few weeks ago the signs became acutely worse. The epigastrium pain was very severe, and was accompanied by nausea, vomiting, moderate hæmatemesis, and collapse. On admission she was emaciated, anæmic, feeble, vomiting from time to time, the vomitus at times containing blood. Palpation of the abdomen showed some rigidity, epigastric tenderness, and an indefinite palpable mass in the right hypochondrium. Inflation gave one the impression of a very small stomach. A gastric analysis was not made, for obvious reasons, but instead a bismuth meal was given, which revealed the interesting condition shown on the *x*-ray plate. Dr. Armstrong performed the operation and found a large ulcer in the middle of the stomach causing contraction of the hour-glass type, and adherent to the pancreas were evidently the small saccular pockets shown in the skiagraph. A gastroenterostomy was performed. The patient seemed to do well for a time, but finally died from general weakness. Autopsy verified the clinical findings and showed the presence of a deep ulcer on the posterior wall with marked perigastritis and adhesion to pancreas, showing the hopelessness of excision. The *x*-ray findings are rendered very clear by the burrowings of the ulcer.

2. A girl of twenty-one, illness began in September with cough, expectoration, profuse sweats, and progressive loss of strength—in fact just such a history as one would expect in abscess of the lung, though the cause was ill-defined. The examination of the chest showed a small area of dulness with blowing breathing and sounds that were suspicious of cavitation in the right apex behind. The skiagraph showed a definite shadow of consolidation and a small area evidently representing the abscess cavity. After one week of intermittent pyrexia and two weeks of very moderate fever, the patient rapidly improved, till at present her condition is practically a cure without treatment, either medical or surgical. The second skiagram shows the return to normal.

3. A woman aged fifty-four, entered hospital complaining of weakness, cough, expectoration, and loss of weight, illness one and a

half years; typical history of pulmonary tuberculosis. Examination of chest showed marked dulness on percussion over right side, particularly in interscapular space and just below it, while the base itself was free from any impairment. Blowing breathing over part showed definitely that consolidation was present, and one naturally concluded that the case was one of pulmonary tuberculosis. Repeated examination of sputum failed to reveal any bacilli, while leptothrises have been constantly present in every examination of the sputum. Cultures could not be successfully obtained, however, but absence of any other germ has made it suggestive that this may have some association with the disease. It is true one does not expect leptothritic germs except when abscess or gangrene is present, but in this case the sputum never gave any indication of the condition. The patient is improving and the germs are gradually diminishing in number.

TORONTO ACADEMY OF MEDICINE

At the monthly general meeting of the Toronto Academy of Medicine, held on December 3rd, four papers were read.

Professor J. J. MacKenzie dealt with the subject of "Anaphylaxis" and Infection; giving an historical sketch of the development of present day knowledge of anaphylaxis, the phenomena of the condition and their physiological interpretation. Serum disease, hypersensitiveness in man, and the relation of tuberculosis, smallpox and vaccinia were also discussed. The influence of allurgic phenomena upon the clinical manifestations in acute infections was dwelt upon, as also were the allurgic characters in the clinical course of typhoid fever and typhoid relapse.

Dr. Duncan Graham, speaking of the diagnosis and treatment of syphilis, mentioned various interesting historical landmarks. Among these were John Hunter's supposed establishment of the identity of gonorrhœa and syphilis; Metchnikoff's experiments with monkeys; Shaudinn's discovery of the spirochæta pallida; Wassermann's discovery of serum diagnosis, and Noguchi's cultivation of the spirochæte. Diagnosis may be made by the discovery of the specific germ in the primary sore or by means of the Wassermann reaction, both of which are of the utmost importance in regard to treatment. Local diagnosis (microscopic) may be made in seventy-five per cent. of cases during the first four weeks. This percentage varies from one hundred per cent. during the first week to about twenty per cent. during the fourth week in untreated cases. The

Wassermann reaction, on the other hand, increases in strength. Twenty-five per cent. of untreated cases become positive within the first three weeks, while at the end of two months one hundred per cent. are positive. In cases treated thoroughly before the Wassermann appears, relapses occur only in ten per cent.; this percentage increases if treatment is delayed. In the case of salvarsan, three or four full doses should be given at short intervals. In all cases the Wassermann reaction should be looked upon as the criterion of cure.

Professor J. B. Leathes, speaking on the subject, "Nitrogen Waste and Infection," said, "The excretion of nitrogen is increased in infective fevers (Traube, 1855; Vogel, 1854). The significance of the phenomenon is a question on which opinions differ. Excretion of nitrogen derived from the cells of the body is increased three or four fold by lack of food. Hunger will reduce the average life of the protein components of the body from five hundred to one hundred and twenty-five days. In fever even the latter figure is decreased, so that the mean life of tissue and body proteins approximates that of hæmoglobin (i.e., six to eight weeks). One explanation of this excessive nitrogen excretion ascribes it to the raised temperature, a factor, which, acting in a manner analogous to its action in a chemical reaction, accelerates tissue changes. This, however, would only partly account for the surplus excretion since experiment has proved a difference between actual and estimated nitrogen waste. Increased cell destruction resulting from bacterial toxins is another explanation. The fact that a full carbohydrate diet will inhibit nitrogen excretion in fevers is an interesting but confusing discovery. Lastly, it is suggested that toxins may let loose intracellular proteolytic enzymes or paralyze the agents which normally restrain their action. In relation to the phenomena of anaphylaxis it is significant that in treating horses with diphtheritic toxins only those animals will yield antitoxins which react to the injection with an increased output of nitrogen."

Dr. O. R. Mabee discussed the question of "Diseases Produced by Filterable Viruses," illustrating his remarks by means of a chart of these organisms and their properties.

THE OTTAWA MEDICO-CHIRURGICAL SOCIETY

A REGULAR meeting of the society was held December 20th, 1912, in the Carnegie Library, Dr. J. D. Courtenay in the chair. Dr. Valin presented a case illustrating extensive skin grafting.

Dr. Brown read a paper on typhoid perforation. He found records of seventeen cases having perforation in over two thousand cases of typhoid.

Dr. I. G. Smith reported a case, a man aged fifty-five, who had fallen on the abdomen against the edge of a sidewalk, and showed symptoms of bowel perforation. He had been in good health up to the time of injury. Pain and distress were felt in the epigastrium only. On opening the abdomen the bowel presented multiple small hæmorrhagic areas, and in the sigmoid were found a perforation and an area in which the outer coats of the bowel were lacerated. The bowel was repaired and the abdomen drained. Patient doing well after eight days. The symptoms in this case were centred in the epigastrium, and it was only after a careful search that the perforation was discovered.

Dr. Chabot reported a case of enlarged prostate. This was removed under spinal anæsthesia. Patient had delirium before and after operation, and during operation had collapse. Finally made a perfect recovery.

Dr. Gibson reported two cases of malignant prostate. He considered this condition was quite common in prostate cases.

CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY

On November 4th, a meeting was held of the physicians from the towns of Nanton, Cayley, High River, Okotoks, Blackie, and Vulcan, and the Central Southern Alberta Medical Society was formed. The officers elected were: president, Dr. J. S. Murray, Okotoks; secretary-treasurer, Dr. G. F. Learmonth, High River.

CALGARY MEDICAL SOCIETY

The third annual banquet of the Calgary Medical Society took place December 10th, under the presidency of Dr. E. J. Madden. Seventy members were present and the meeting was a most successful one. The officers are: president, Dr. E. J. Madden; vice-president, Dr. William Hackney; secretary, Dr. J. P. Palmer; treasurer, Dr. G. Johnson.

BRITISH COLUMBIAN MEDICAL ASSOCIATION

The officers for the year 1912-1913 are: president, Dr. A. S. Monro, Vancouver; secretary, Dr. J. W. McIntosh, Vancouver.